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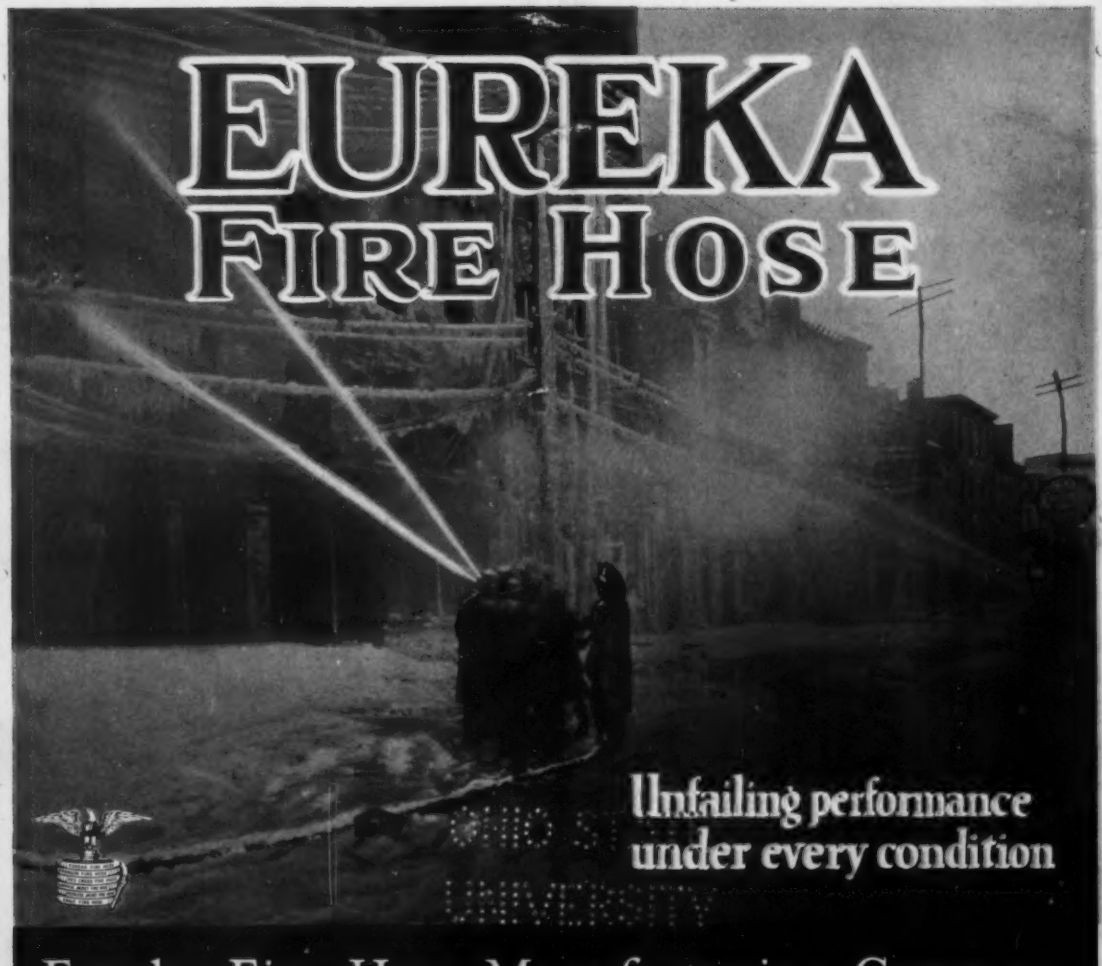
The Journal of the Fire Protection Profession

JANUARY 9, 1929



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A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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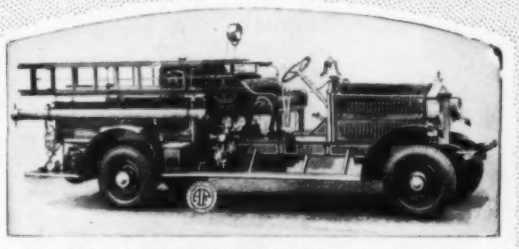

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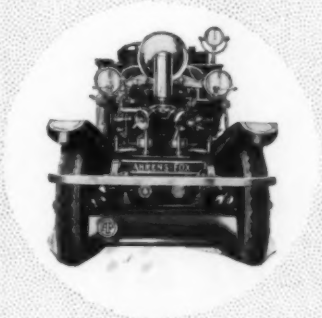

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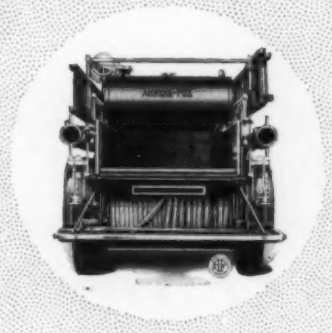

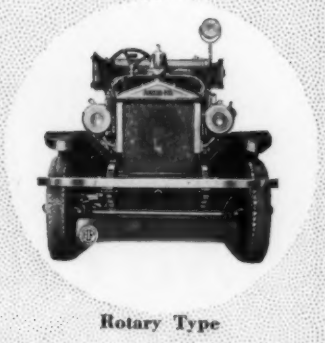

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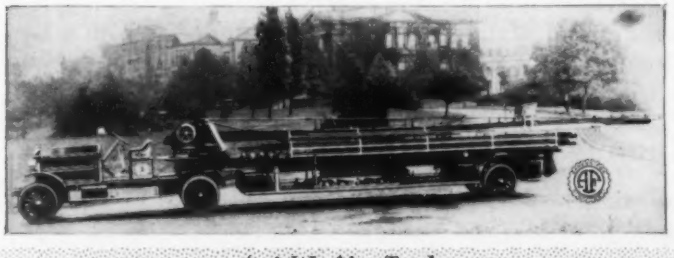

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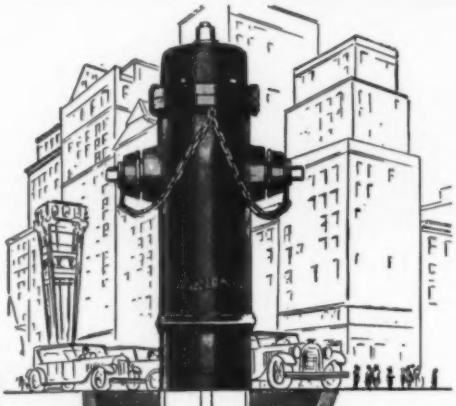

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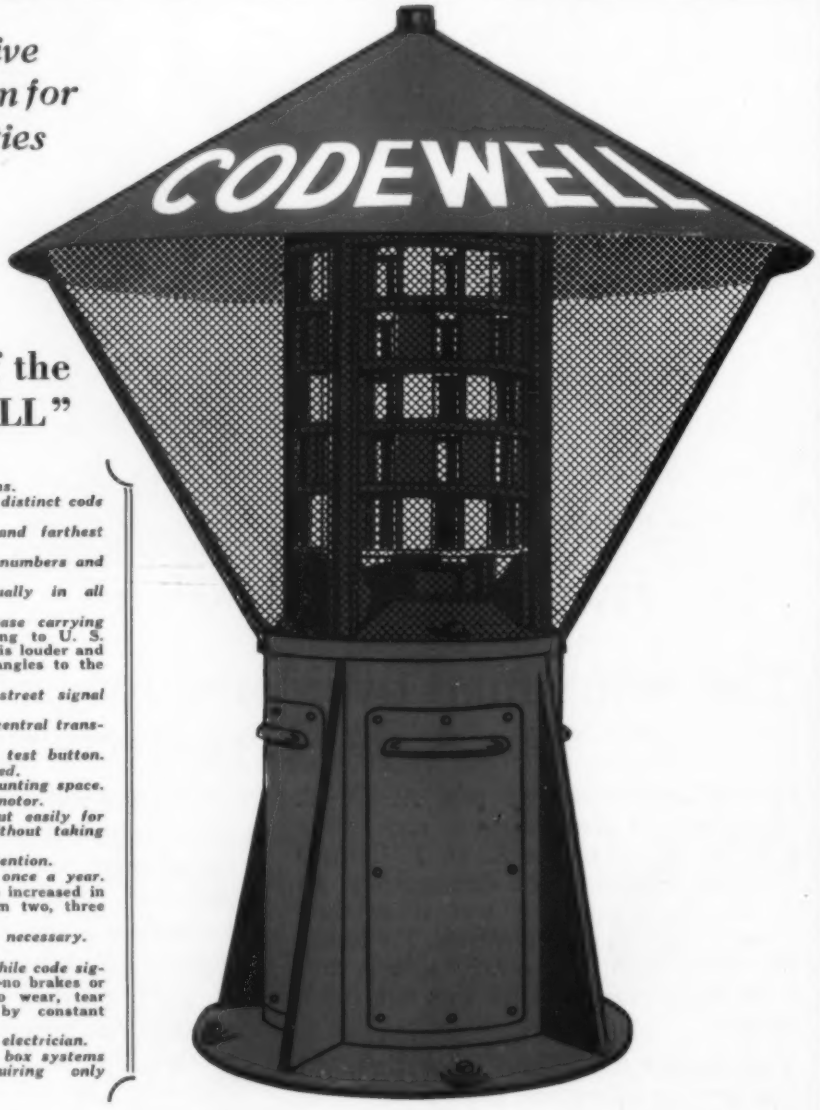

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The Journal of the Fire Protection Profession

VOLUME LXXXII JANUARY 9, 1929 NUMBER 1

How Firemen are Trained in Pittsburgh

Methods Adopted in the Training School for Officers and Men in the Pennsylvania City—Up-to-Date Methods—Steel Training Tower

By WILLIAM E. PATTERSON, Bureau of Fire, Pittsburgh, Pa.

TRAINING the fireman—from "rookie" to officer—in the science of fire fighting has become one of the most important features of the modern Fire Department. The following article describes the methods employed in the training school for officers and firemen in the city of Pittsburgh, Pa.:

Capt. Alvin K. Foster
Chief Instructor, Pittsburgh
Firemen's Training School

The Training School for Firemen in the Bureau of Fire, under the Department of Public Safety of the City of Pittsburgh was established through an Ordinance passed by City Council, September 21, 1915, and approved by Mayor Joseph G. Armstrong, September 27, following, the Training School to comprise the following classes:

Company Class, Officers' Class, Engineers' Class and Probationary Firemen's Class, the classes to consist of courses of instructions by means of lectures, practical lessons and manual training in the following subjects:

Discipline and Administration; First Aid to the Injured; Fire Prevention; General Fire Fighting; Use of Apparatus, Implements and Tools; Auxiliary Appliances; Engines and Boilers; Fire Alarm Telegraph and Auxiliary Systems; Gasoline Motor Machinery; Care and Repair of Hose; High Tension Electric Currents; High Pressure Service; Combustibles, Chemicals and Explosives, and the Care of Horses.

Administration of Training School

The activities of the Training School are administered by a Board of Instructors, which Board is under the control of the Director of the Department of Public Safety, with the Chief of the Bureau of Fire as President, ex-officio of said board and has the authority to make to the Director from time to time such recommendations, as in its opinion may add to the efficiency of the bureau and the school.

All members of the Bureau of Fire, except those who are members of the Board of Instructors, are required to take the prescribed course of instructions in their respective classes.

All those officers and firemen eligible for promotion shall attend the school under such requirements, rules and regulations as may be established by the Board of Instructors.

So far as practicable no officer or fireman shall be promoted until he has successfully concluded the course of instruction to the satisfaction of the board. Upon the completion of the several courses of instruction, the board shall hold examinations, oral and practical, and certify to the Director of the Department of Public Safety the names of all those in the various classes who have made an average rating of seventy per cent, or over. In order of their standing, and against each name shall be placed the rate per cent attained.

All probationary firemen failing to make a general average of seventy per cent, shall be dismissed. Any officer or fireman failing to make a general average of seventy per cent shall be required to take the course a second time. If he fails to qualify upon a second examination, the board shall make and lodge with the

Left, Rescue of Unconscious or Injured Man from Building by Means of Scaling Ladder, Pittsburgh Firemen's Training School. Right, Sliding Double on Life Line

Director of the Department of Public Safety a charge of either "Disability for Service" or "Inefficiency" as the case may be.

Constitution and Duties of Board of Instructors

The constitution of the Board of Instructors and their duties in detail are as follows:

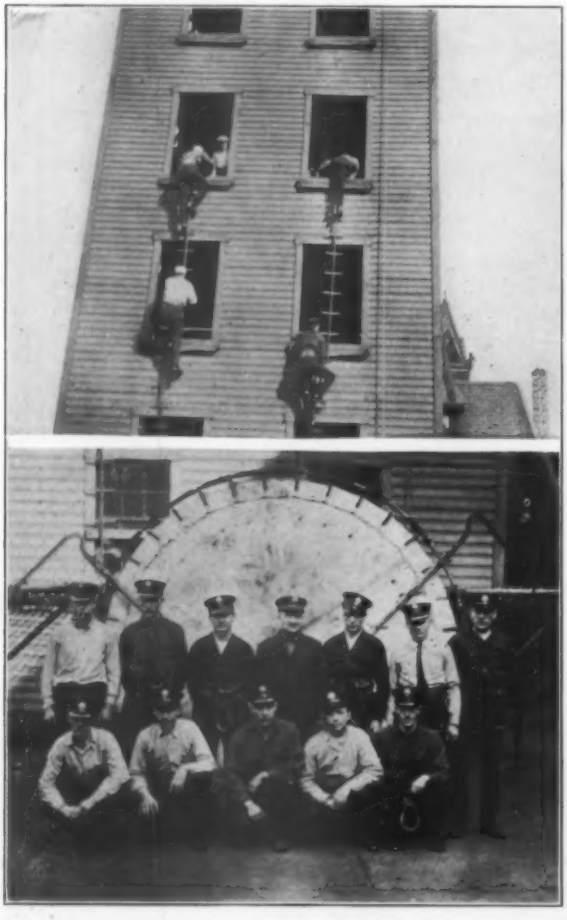
Chief, Bureau of Fire.— President Ex-officio.

Battalion Chiefs.—In charge of Company and Officers' Classes, and Instructors in Discipline and Administration, High Pressure Service and General Fire Fighting.

Two Instructors.— General Instructors in all classes, and have entire charge of the Probationary Firemen's Class.

Surgeon of Fire and Police Bureau.— Instructor in First Aid to the Injured.

Superintendent of Bureau of Electricity.— Instructor in High Tension Electric Currents, Fire Alarm Telegraph and Auxiliary Systems.



Upper, Scaling-Ladder Drill, Pittsburgh Firemen's Training School. Lower, a Drill Squad of the School

Superintendent of Municipal Garage.— Instructor in Gasoline Motor Machinery.

Superintendent of Municipal Garage.— In charge of Pumpman's Class and Instructor in Care, Operation and Maintenance of Motors and Pumps.

Inspector of Board of Fire Prevention.— Instructor in Combustibles, Chemicals and Explosives, and Fire Prevention.

Regulations as to Attendance at Classes

All fire companies are required to attend Company Class with their full complement of officers and men at such times as the Board may direct. The course of instructions in this class includes the use of apparatus, implements and tools, the entire work incidental to the duties of the service, except the actual extinguishing of fire, and handling and placing of apparatus in service, implements and tools and their practical use, hose line combinations, emergency repair of hose and the removal of "burst-lengths," under the various conditions occurring at fires, tying of knots and hitches, ladder exercises and rescue work.

The Various Classes

In the Officers' Class, all Captains (and firemen who are eligible for promotion) are required to attend the class under such rules and regulations as may be determined by the Board of Instructors.

This class is operated in sections. Each section being required to attend twice a week, from 9 a. m. to 12 m., or 1 p. m. to 4 p. m., for a period of six weeks.

Special Instructions given in this class shall consist of the latest methods of fire-fighting, manner and means of fire prevention, command and control, practical instructions in concerted action and instructions in "Team Work" given so as to unite the proficient units of the organization into a capable whole, to the extent that not only the loss from fire, but the destruction of property by water and other means of fire-fighting may be minimized.

In the Pumpmen and Driver's Class, all pumpmen, drivers (and firemen eligible for promotion to the position of pumpmen) shall be required to attend this class and take a course of instruction limited to the care, maintenance and operation of pumpers and gasoline motors under such rules and requirements as may be determined by the Board.

In the Probationary Firemen's Class, all probationary firemen are required to attend this class for a period of at least fifteen days upon their appointment as probationary firemen, and shall receive practical instructions in the use of apparatus, implements and tools, auxiliary fire appliances, scaling ladder and other appliances and elementary lessons in the science of fire fighting and first aid to the injured.

The Training Tower

Following the creation of the Training School by Council the School was located and installed in the quarters of Engine and Truck Companies No. 14 on Neville Street near Ellsworth Avenue where the first class of instructions was held on March 8, 1915 with Captain Alvin K. Foster, of Engine Co. No. 19, and Captain James Kane, of Engine Co. No. 34, as instructors.

During the latter part of 1915 a six-story steel frame training tower structure with outside walls of wood, was erected in the yard in the rear of the above Fire Station which was placed into service April 1, 1916. This structure which is about twenty-five feet square is equipped with two rows of windows facing the yard for scaling ladder work, an inside stairway and a standpipe equipped with inside and outside fire department connections. The first floor of the training tower is used as a class room for general instructions in operating fire alarm boxes and the transmission of the different signals used in the Fire Department as well as practical instructions in the use of the different tools and appliances and their proper names, the latter part of the above instructions being carried on indoors during bad weather when it is impossible for the men to work outside.

Owing to the lack of space and suitable quarters for class rooms, etc., the complete course of instructions as provided for in the ordinance creating the school cannot be carried out to their fullest extent. At present company classes only are conducted at the school, while classes for officers are conducted in the quarters of the Battalion Chief of each battalion.

Periods of Attendance at School

The uniformed fire fighting force attend the Train-

(*Continued on page* 31)

The Rescue Squad—What It Does

Such Units in Large Cities Accomplish a Great Deal in Safeguarding Life—Local Conditions Govern Equipment Required by These Units

By ALFRED KINSELLA, Captain (Retired), New York Fire Department*

FIRE Department Rescue Squads have been given their share of publicity, but the publicity features, however, deal with the spectacular, and therefore give the conscientious fire chief meagre facts. He has little data on which to base his program and requests for appropriation for the formation and maintenance of this most valuable aid to fire efficiency. This paper will present important features in organizing rescue companies. While most large cities in the United States either have rescue squads, or have companies carrying rescue squad equipment, I wish to direct particular attention to the feasibility of every fire department, large and small, organizing and maintaining a rescue squad.

Although large fire departments in Europe have rescue squads, it remained for the large departments in this country to organize and adapt rescue company activities to conditions in the United States, and to bring rescue squads to the high plane of efficiency on which they operate in our largest cities today. In 1915, Rescue Company No. 1, of the New York Fire Department was organized; this was closely followed by Chicago, Boston, Philadelphia, San Francisco, Los Angeles, Detroit, Washington, and others.

The original equipment, which of necessity had to be selected from equipment which was designed for other uses, was highly technical and required long training by company members. The success attending the installation of rescue companies in the many cities is attested by the development, improvement, and simplification directed toward the design of equipment applicable to rescue squad duties. Rescue squads, instead of being limited to the very large cities, are now being formed in smaller cities, towns, and even villages.

Type of Men Needed for Work

The selection of personnel for the rescue squad is, in my opinion, of the first importance, particularly the selection of the commanding officers. It must be borne in mind that besides having engine, and truck company experience, the officers must be capable of thoroughly training men in first aid, and in the special work anticipated. The commanding officer must select the best methods of performing this special work now in use.

Four suggestions in the examination of the qualifications of applicants for your rescue squad are given here: A man must have a serious interest in his duties, and the work he will be called upon to perform. His record as a fireman, and his experience previous to joining the fire department should be examined. Where there is a selection, men who have been mechanics, such as engineers, electricians, iron workers, etcetra, should be given preference, provided they have the other necessary qualifications.

Of major importance are the physical and mental qualifications of the applicant. A thorough physical examination is something that should be insisted upon by the head of the department, and the application of common sense and intelligence will speak for themselves in efficiency.

In selecting apparatus for the rescue squad, be sure that it is a reliable motor. Equip the car with pneumatic tires; and mount it on a body that will conveniently house and protect the equipment that you select, and carry the number of men necessary.

Equipment Required on Trucks

A completely equipped rescue squad for a large city should carry the following equipment: Self-contained oxygen breathing apparatus; all-service masks; hose masks; signal line; reliable electric lamps; forcible entry sets; acetylene torch; jacks; rigging, including bracing, wedges, etc.; electric saws; electric drills; protective clothing, such as wading pants, rubber gloves, etc.; insulated wire and bolt cutters; grappling irons; roof ropes; special belts for raising and lowering victims; safety tongs for removing victims from contact with live wires; stretchers; first aid kit; approved carbon-dioxide and oxygen inhalators; equipment used by truck and engine companies, such as axes, hooks, nozzles, reducers, increasers, etc.

It is also recommended that the rescue company carry at least one hundred feet of one and one-half inch hose, and controlling nozzle, so that men wearing protective equipment can reach the seat of a smoky fire much more quickly than with larger hose equipment.

Local conditions will govern the amount and selection of equipment that your rescue company will eventually carry, but to my mind, there is no reason why the formation of a rescue company should be delayed until all of the equipment can be secured. Many communities will probably find it desirable to combine salvage

* Paper delivered at convention of Eastern Association of Fire Chiefs, Philadelphia.

"COMMUNITIES of all sizes can readily justify the organization of rescue squads in their fire departments. The squads will positively help in the reduction of fire losses and they will contribute materially in saving life. The outstanding value is that they improve the efficiency of the entire fire department."

corps works or ambulance work, or both, with rescue company duties. Where an ambulance is not available, it is particularly suggested that the ambulance and fire department rescue squad combine to good advantage. In this case, the apparatus should, of course, have a closed body.

In addition to the duties performed by all companies, the rescue company, on account of the special equipment and special training provided its members, performs other duties, among other things: ventilation; rescue of the victims of transportation accidents and building collapses, cave-ins, etc.; entering buildings and ships charged with poisonous gases, such as ammonia, sulphur dioxide, fumigating gases, etc.; accidents in passenger elevators in buildings; the resuscitation of those overcome by gas, smoke, electric shock, or submersion. More and more rescue companies are being called upon to resuscitate apparently still born infants, and it is particularly gratifying to note that this activity of fire department rescue companies was highly commended by Dr. Yandell Henderson of Yale University, in the Journal of the American Medical Association.

Upon arrival at a fire, if no special work is to be performed, the rescue company, of course, undertakes regular company duties until the fire is under control.

History Shows Value of Rescue Squads

The recent subway disaster in the vicinity of Times Square, New York, brings to mind that Rescue Company No. 1, New York Fire Department, was organized as a result of a fire in the subway at Fifty-fifth Street and Broadway in the winter of 1914-1915. At the recent disaster the rescue squads did invaluable work in removing the victims from the wreckage.

A gas explosion in the battery room of a United States Government submarine in the Brooklyn Navy Yard during the war caused the summoning of the rescue company with the result that the fire was extinguished and the victims removed. This could not have been accomplished in any other way, even with the then existing resources of the Brooklyn Navy Yard.

In the Boston Arena, in 1927, an ammonia leak, loosing one ton of ammonia, resulted in the death of the chief engineer. A fireman, equipped with an all-service gas mask made his way through the fumes to a point one hundred forty feet from the outside air, climbed a ladder, removed the engineer's body, which hung limp over an ammonia pipe forty feet in the air, carried him down the ladder and out to fresh air.

Early in 1928, the rescue squad of the Newark, N. J., Fire Department, were called upon in an emergency, with their inhalator and resuscitated a baby apparently still born to the wife of a Newark policeman. Details of this and many similar cases are common. It is certain that the heart of the average tax payer warms more to the Fire Department when reading of such a case than at other times.

In 1927, a fire occurred in Brooklyn, N. Y. Six victims were rescued from the building. The two who suffered more happened to be father and son. Rescue Company No. 2 of the New York Fire Department undertook the resuscitation of these two victims, with the result that in six and one-half hours the boy was revived, and in thirteen hours the father was revived. Such records only serve to emphasize the importance of organizing rescue companies.

Communities of all sizes can readily justify the organization of rescue squads in their fire departments. The squads will positively help in the reduction of fire losses, and they will contribute materially in saving life. The outstanding value within the fire department, however, is the fact that the organization of rescue companies will improve the efficiency of the entire fire department. It is recommended that a rescue company be planned and organized in every municipality, securing the equipment in the best way possible, but not withholding the formation of the company, or the training of the men because of lack of complete equipment. It is further recommended that the officers of rescue companies endeavor to attend the full fire college course in some large city, and to be quartered with the rescue company while so doing.

It's Dangerous for an Oil Train to Go Exploring

Twenty-seven cars filled with gasoline burned continuously for ten hours after the train left the tracks of the Rock Island Railroad near Zyba, Kans., twenty miles from Wichita. The loss is estimated at $60,000. Large dense, black clouds covered the scene.

Massachusetts Fire Chiefs' Club Meets

The December meeting of the Fire Chiefs' Club of Massachusetts was held in the Parker House, Boston, on December 19 with Chief Selden R. Allen, of Brookline, presiding.

Discussion of the tenure of office legislation for chiefs of fire departments in Massachusetts was the principal business and a new draft of the proposed bill was presented.

Ex-Chief A. Howard Fiske, of Framingham, Mass., former secretary of the club, was elected a life member. Chief Philip J. Robichaud, of Hanson, Mass., and Ex-Chief Robert D. Nesmith, of Whitman, Mass., were elected active members of the club.

Seated at the head table at the luncheon which preceded the meeting were President Allen; Chief Alfred Mead, of Quincy; Chief John W. O'Hearn, of Watertown; Supt. Henry Thompson, of the Boston Protective Department; Chief Oliver T. Sanborn, of Portland, Me.; and P. Hildreth Parker, of the Box 52 Association.

Traffic Manager George F. Cobb told of his trip to Birmingham and of arrangements for the next convention of the International Association of Fire Chiefs.

Among the guests were Fire Commissioner Austin, of Nashua, N. H.; Ex-Chief J. A. Webber, of Revere, a life member; Lieut. Thompson, of Lynn; and H. K. Pratt, of Bridgewater, Mass.

HARRY BELKNAP.

New Apparatus Delivered to Elk Horn, Ia.—A Peter Pirsch chemical car has been delivered to Elk Horn, Ia.

Mt. Pleasant, Pa., to Install Fire Alarm—A fire alarm system consisting of forty boxes will be installed at Mt. Pleasant, Pa. Bids for this work will be opened in February.

Hicksville, N. Y., to Install Fire Alarm—Hicksville, L. I., N. Y., has awarded a contract for a fire alarm system to the Gamewell Company.

What Should Modern Rules Include?

Great Variety of Rules Applying to the Rank of Captain—Sixth of a Series of Articles on This Subject

AS compared with the rules applying to chief, assistant chief and battalion chief described in the first three articles of this series, the regulations pertaining to captain are indeed numerous. Two hundred and thirty-six different rules are found for this rank in the 41 reports analyzed. The following is a continuation of this analysis from last issue:

The following rules have been found listed in but one city each:

Akron, Ohio

"They shall make daily detail of house watch, and shall stand said watch themselves when the service requires it. In no case whatsoever shall a man on watch be relieved until his relief has reported for duty and registered."

"They shall report any fire escape drop ladder which is out of place, and any fire escape encumbered. Drop ladders shall be replaced after the fire is out."

"They shall make a special report if any driver of a United States mail wagon shall drive over any line of hose unnecessarily, stating if such driver's destination was within fire lines and in what direction he was going."

"They shall forward special report as to the effects of inferior fuel, when used at fires, on the steaming of boilers, and state from what station it was taken; also report inferior gasoline or oil and its effect upon motors."

"Shall give written notice to members of their companies who may have uniforms or parts of uniforms condemned, specifying when such condemned articles shall be replaced, and make proper entry in company journals of their action. Shall see that uniforms or parts of uniforms obtained by the members of their commands are reported to the Chief, and see that all uniforms are kept in good condition."

"They shall not allow the apparatus to leave the station (except upon special orders) until an alarm has been received or given."

"In all double houses, where both companies respond to the same alarm, the right of way shall be conceded the company nearest in the direction of the box from which the alarm is given, provided, however, that the steam engine shall follow in the rear."

Atlanta, Ga.

"Captains not to let extra men who have no experience in using the telephone take an alarm of fire, when it is their duty to learn and instruct these men."

"Captains and lieutenants should by all means study up the locations of hospitals, apartment houses and schools and factories, as they are likely to be sent in by name on the telephones."

"Captains of aerial trucks should by all means have his apparatus raised often enough to see that every man knows the workings of same."

"All tools, pipes, wrenches, etc., belonging to the different companies should be stamped with the company number to be able to identify in case of loss."

"Captains of all trucks must see that there are no broken rungs in ladders, and that all ladders, ropes, etc., must be in first class condition."

"The greatest care should be taken of hose at the station. It should be properly cleaned, dried and changed; and avoid running over hose as much as possible and only in case of necessity. Also laying hose in sun at quarters must be avoided as much as possible."

"In case of death of his wife, child, father, mother, sister, brother, or any member of the family, of a member of the department, he shall be granted a leave of absence by the chief of the department, such leave not to exceed two days, for which he may receive pay."

Baltimore, Md.

"Treat subordinates with courtesy, and discourage any approach to undue familiarity on their part as detrimental to the interest of discipline."

"Prohibit card playing or other games with citizens in quarters."

"Prohibit chairs in front of quarters before 7 p. m. unless in full uniform."

"Prohibit dismissed members from entering quarters, or members who have resigned loitering about quarters at any time."

"In case of dangerous illness of a member of family of any member of the fire department, a special leave for short periods is authorized, or in case of death of wife, parent, child, brother, or sister, leave of absence, not exceeding three (3) days, may be granted subject to approval of respective superior officer."

Cambridge, Mass.

"Captains shall make a written report to the chief of department of any shortage in laundry received from laundry."

Dallas, Texas

"Captains shall devote at least one hour every week to discussing with the members of their companies the rules and regulations of the department pertaining to their duties, and instructing and examining them as to character and location of fire plugs and as to the peculiarities of construction character of business carried on and means of fighting fire in the factories and large buildings in their districts, and all other matters tending to make such members more efficient and better informed and disciplined."

"Captains shall perform all duties with reference to inspection and making reports on same, as elsewhere provided, and shall drill their companies and discharge all other duties that may be required of them."

Denver, Colo.

"They shall promptly report to their assistant chief all violations of the fire ordinances which may come to their notice, also obstructions to streets, or fire hydrants, by building materials, excavations, etc."

"They shall change 'shifts' at 6:00 p.m. on the fifteenth day of each month."

Detroit, Mich.

"Skid chains shall be kept in good repair and ready for immediate use."

"Self starters shall be used only for the starting of apparatus when responding to an alarm of fire; at all other times the starting crank shall be used."

"Shall not detail drivers or motor engineers to other duties when their services are required to get apparatus ready for service."

"When approaching all railroad or electric street railway crossings shall cause the apparatus to be brought to a full stop and satisfy themselves that a safe crossing can be made before attempting to move over the tracks; provided, however, that no stop unless necessary need be made at electric street railway intersections. In no case will they accept the signal of a railroad gate tender, or a citizen."

"Shall forward to the secretary's office when a trial man leaves his company, a time card showing the actual time served for the current half month."

"Shall have full charge of their respective companies and shall command one unit. The lieutenant shall command the opposite unit and shall make reports to the captain who shall forward the same to the chief of department, through the battalion chief."

"The captains and lieutenants shall change to the opposite unit on the first of each month."

"Shall when a trial man has served the probationary period in their respective companies, report on forms furnished for that purpose as to the qualifications of such trial man."

"Shall allow members of their company only to sleep in the dormitories."

Erie, Pa.

"The commanding officer of the off-going shift shall not turn the authority over to the commanding officer relieving unless the officer is in proper condition to receive the same; if not, he must notify his next superior officer promptly. Both officers will be held accountable for the enforcement of this rule."

Fresno, Calif.

"They shall see that 1½-inch hose lines, together with 1½-inch siamese and nozzles are laid off in front of every working fire at

the time large lines are anchored in order that the 1½-inch hose and equipment will be immediately available when its use is desirable or required."

"They shall, on arrival at alarms of fire at which they do not go into service, after having reported their arrival to the chief officer and being instructed to 'stand by' return immediately to their apparatus and remain there with the members of their company until they shall have received instructions as to their next operations or action."

"They shall prohibit female visitors being in or around company quarters after 8 p.m., without first obtaining permission from district chief."

"They shall see that when the flag becomes unfit for service, either through wear or exposure, it is replaced with a new one and the old flag returned to headquarters for proper disposal."

"They shall prepare a roster of the company and see that each name is spelled correctly and that the initials are correct and use this roster in making up time reports."

"They shall see that members riding out on apparatus leaving company quarters, other than on fire duty, are in regulation dress or fatigue uniform as the circumstances may require."

"They shall not allow lights in dormitory after 8 p.m., nor any talking or boisterous conduct."

"They shall see that all lanterns are extinguished on motor driven apparatus when the gasoline tank is being filled."

"They shall, whenever notified that a fire hydrant has been installed, is changed or is out of service, immediately make a record of the same in the company day book, and give notice to the officer of the oncoming shift."

Jersey City, N. J.

"Commanding officers shall prefer charges in all cases where the blame may be imputed for accidents or collisions."

"In stretching a line of hose to a fire no greater length of hose than necessary shall be laid, as the shorter the line the more effective the stream."

"One or more multiple alarms may be omitted and the next in order struck, thus, second alarm may be omitted and a third struck, or a second and a third omitted and a fourth struck, in such case the multiple alarm sent out shall be understood to include those omitted, and each company assigned to the fire on either of said alarms shall immediately proceed thereto, and the covering companies shall proceed direct to the stations they are assigned to occupy under such multiple alarms."

"The term multiple alarm shall apply to any alarm after the first when struck for the same box as the first alarm."

"A multiple alarm shall be ordered only by the officer in command at a fire."

"In case companies have not returned to their quarters and reported for duty from an alarm of fire and another station is received to which they are assigned, such companies shall not respond to the second station."

"No officer shall interfere in matters or operations for which another officer of equal rank is responsible, except with the consent of the latter officer or by order of a superior."

Milwaukee, Wis.

"They will cause wash hose and connections to be removed from hydrant in front of quarters immediately after using."

"They shall promptly report to the chief engineer all violations of the fire ordinances, and by well sustained charges report any transgressions of law or ordinance which shall come to their observation or be brought to their notice. They shall report all hoist-ways open after business hours, or otherwise, in violation of law or ordinance, and obtain the names and addresses of occupants and owners of the premises."

"At all times when acting as assistant chief, the captains will wear the style of fire helmet at fires prescribed for the acting assistant chief."

"They shall use discretion relative to blocking streets and car tracks with apparatus."

"Keep a file of General and Special Orders within easy reach of the members."

"They shall see that all paint brushes, pots and cans are returned to the department shop as soon as possible after using; also all tools loaned for temporary use."

"They shall have the engine located at their quarters taken to some convenient cistern or river and draft water from same at least once each month. The report of each test must be made and signed by the engineer in charge and signed by the officer in command and forwarded to the superintendent of machinery and apparatus. This rule will not apply where an engine has worked at a fire and drafted water as above during the preceding thirty days, but in this case a report must also be made and forwarded."

"They will be held responsible for all the implements, tools, etc., belonging to extra apparatus which was with said apparatus when brought to the quarters of their company, and see that they are all returned when such apparatus is sent from their quarters."

(To be continued)

Gasoline Explosion in Garage Causes Exodus of Thousands

The dropping of an oil lamp which was suspended from the rear end of a truck, is believed the cause of a fire that destroyed a garage on the lower East Side of New York City; two unidentified men were burned to death. Explosion of fuel tanks sent the flames high into the air and caused thousands in the neighborhood to rush to safer positions. The fire destroyed the garage and its contents of about two hundred automobiles. Firemen are here shown searching through the ruins after the fire.

Chief Herring Praised by Public Press

In the colored magazine section of the *St. Louis Globe-Democrat*, one of the largest newspapers in the Central West, there appeared an account of Chief Albert Herring, head of the Murphysboro, Ill., fire department.

The story tells about the time his home town was struck by the tornado and almost completely wiped out, and of his relief work. Part of the article follows:

"So Herring decided that if he was to have a department that was strictly up to snuff it was up to him to get it. He made a trip to St. Louis and called on his fire-fighting friends there. He knows them all—Panzer, Henderson, Alt. He told them he was looking for some A-1 apparatus for mighty little money. They said they would see what they could do. Well, the upshot of it was that Murphysboro was sold some discarded equipment that was ample for its needs. The price was so nominal that it was ridiculous, but St. Louis had no further need of it in view of recent purchases of better and more modern equipment, and it met an emergency for Murphysboro and Herring.

"None of the equipment was motorized, so Herring went to a garage man and for another nominal sum secured an automobile engine which he hitched to his ladder truck and he can go to any fire any place now as fast as he likes.

"'The department has about $11,000 worth of equipment now,' says the chief. 'However, don't think we paid that for it. We received more than $8,000 worth in gifts.' Which shows that when it comes to building up a department from nothing into something Herring has a rare talent.

"If you wish to meet a man who has real enthusiasm for his work, step around to the fire station some time and ask for Al. Everybody calls him that. He must be a man of scrupulously clean habits. The station is as tidy as a Dutch kitchen. Upstairs where the men sleep and where the chief has his office, the beds are snowy white, the brass is polished into mirror-like perfection and Herring's desk is as orderly as if he had sixteen clerks to keep it clean. No city department is operated with greater efficiency and with more perfect discipline.

"But one thing which Herring did not tell, being an extremely modest man, is about the large amount of charity that he does every year. Ask anyone in Murphysboro about Herring and they will tell you two things. One is that he is the most consistently enthusiastic fireman in all the state. The other is that his love for the children is so great that much of his salary goes to them every year.

"Every Christmas Day Chief Herring has a celebration for the city's poor. He places a tree on the pavement in front of the station and he lights it with all the pretty electrical do-dads he can find. The band turns out to furnish the music and he gives the poor as good a time as his limited means will permit. Last year 427 boys and girls were at the party, and baskets of food were distributed to 188 families. Don't get the idea that he pays for all this out of his pocket. True, his financial contributions are heavy, but throughout the year he is always giving socials or festivals or plays or something at which money may be raised for his Christmas fund. And the city is well content to call it Herring's party, because without him there prboably would be no such affair."

Holding the Fire to the Top Floor

Difficult Task to Check This Blaze, but Big Streams Would Have Helped

THE fire described in the last issue of this journal in the department on "Administration," was unique in several respects. In the first place it was in an isolated building, and involved a highly hazardous industry. In the second place, the department was poorly equipped with ladders, and had no water tower.

As described in the last issue, the city in which the fire occurred has a population of approximately 85,000. Water supply in the neighborhood of the fire is excellent, all hydrants shown in the diagram being connected to fair or good sized mains.

The department consists of five engine companies, four hose companies, and two truck companies.

Engine Cos. Nos. 1 and 2 each have 750-gallon triple combination machines; Engine Co. No. 3 has a 1,000-gallon triple combination, while Engine Co. No. 4 has a 750-gallon triple combination and Engine Company No. 5 a 500-gallon triple combination.

Hose Cos. Nos. 1, 2 and 3 are equipped with combination chemical and hose cars, with deck guns, each carrying 2,000 ft. of hose. Hose Co. No. 4 is equipped with a similar machine with the exception that it did not have a deck gun. Truck Co. No. 1 has an 85-foot aerial, while Truck Company No. 2 has a city service truck.

The response to alarms in the neighborhood of the fire is as follows: First alarm, Engine Companies Nos. 1 and 2, Hose Company No. 1 and Truck Company No. 1.

Second alarm, Engine Companies Nos. 3 and 4 and Hose Company No. 2.

The following companies are summoned by special call only: Engine Co. No. 5, Hose Companies Nos. 3 and 4 and Truck Company No. 2.

Description of the Fire Building

As noted in the diagram, the fire building was four-story brick and joist constructed, occupied throughout by an oil coat manufacturer. In the manufacture of these particular oil coats, the garments are cut and sewed before treatment with waterproofing. The first coat of waterproofing consists of raw linseed oil which is applied by dipping the garment in a vat of this oil. Second and third coats are put on by brush.

The fourth coat which is a varnish coat is applied by dipping and brushing. This latter coating is thinned with naphtha. The dry rooms used for drying the garments between coatings were of frame construction, which added tremendously to the intensity of the fire once the blaze gained headway.

The basement of the building was used for the storage of linseed oil, naphtha, varnish and cloth.

The first floor was occupied as storage of finished garments, packing and shipping equipment. On this floor were a great number of packing cases, large quantities of garments ready for shipment, and packing material in bulk.

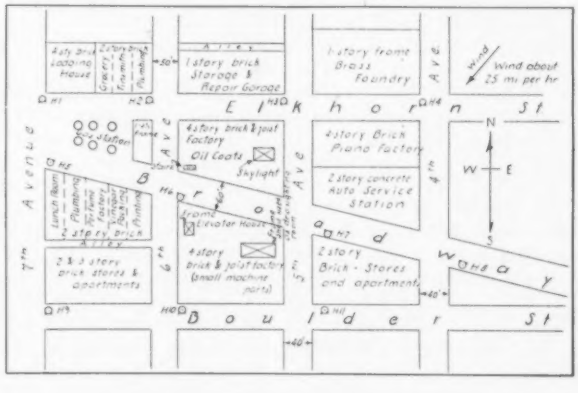
On the second floor the cutting and sewing was done. Here large quantities of waste material had accumulated, due to the fact that at this particular season the factory had been rushed for several weeks with fall orders.

On the third floor the first, second and third coats of oil were applied. There were a large number of open vats of linseed oil, and the floor and woodwork around this part of this building were well soaked with oil.

On the fourth floor the final operation of varnishing the coats was done. On this floor a number of tubs of varnish and containers of naphtha were kept. On the fourth floor also were stored a great quantity of unfinished work, consisting of coats with three coats of oil on them.

The Fire

The fire started in the basement about 3 o'clock in the afternoon, when the force was busily at work. The porters who ordinarily transported the material from the basement to the various floors for operations were all engaged on the ground floor getting finished products ready for shipment before closing time. It is believed that one of the containers of linseed oil sprung a leak and the oil, getting into some rolls of cloth on the floor in the basement, saturated the cloth and ultimately resulted in spontaneous ignition. At any rate, linseed oil had been found flowing along the floor, but due to the rush of work no time was taken to locate the leak and transfer the liquid. The first evidence of fire was noted



by smoke which came from the basement up the hoist shaft.

An investigation was immediately made and it was found that the linseed oil on the floor was burning, as well as the rolls of cloth in the immediate neighborhood. Telephone alarm was transmitted and one engine company (Engine Co. No. 1) and one ladder company (Ladder Co. No. 1) were despatched. Upon the arrival of the fire department, smoke had gotten so dense in the basement that the department could not enter. Just how far the fire had extended in the basement at the arrival of the apparatus is not known, but a sudden flare just as Engine Company No. 1 was getting its first line in operation indicated that the fire had reached the naphtha stored in the basement.

The officer in charge of Engine Company No. 1 immediately transmitted a first alarm bringing out Engine Company No. 2 and Hose Company No. 1.

In the meantime Engine Company No. 1 was stationed at hydrant No. 2 and two lines stretched in on the ground floor, one taking the elevator shaft at the east and the other taking the stairs leading to the basement at the west.

These two lines were placed to hold the fire from rising until additional help arrived. Members of Truck Company No. 1 cleared the building of all employees.

As the balance of the first alarm assignment was rolling in, fire suddenly burst with fury up the elevator shaft which was open from the basement to the top floor. The intense heat kept the line from Engine Company No. 1 away from the shaft and all it could do was to wet around the elevator as well as wet down the ceiling and floor in the immediate vicinity of the shaft.

Engine Co. No. 2 upon arriving immediately stretched in from hydrant No. 3 to the second floor of the fire building, to cover the elevator shaft, but the fire was too fast for them and it had already gone to the upper floors. Hose Company No. 1 was placed at hydrant No. 6 and a single line stretched by ladder to the third floor. Fire was driven back to the elevator shaft on this floor, but it had apparently reached the top floor where the varnish was present in considerable quantity. Shortly after the arrival of the apparatus on the first alarm, the assistant chief who responded, sent in a second alarm and shortly afterward followed it by special call for Engine Company No. 5, Hose No. 3 and Truck Company No. 2.

The fire spread with great rapidity over the top floor, and upon the arrival of apparatus on the second alarm, the fourth floor was completely involved, with fire coming out of the skylight over the elevator shaft.

Suggested Method of Handling Fire

The placement of apparatus as performed by the officer in charge of the first alarm assignment was satisfactory. Suggested placement of apparatus on second alarm and special call is as follows:

Engine Co. No. 3 to be placed at hydrant No. 4 and two lines stretched to the third floor of the piano factory directly across 5th Ave. These two lines to be siamesed into a 1½ inch pipe either by use of deluge set or single lead line. This heavy stream can work with effect on the fourth floor of the fire building, particularly as the wind will favor it. Engine Co. No. 4 to be placed at hydrant No. 7, and two lines stretched to the roof of the concrete auto service station directly across 5th Ave. Inch and a half pipe to be employed here also. This layout will deliver an effective stream across 5th Ave. into the fire building, also being favored by the wind.

It is believed that these two heavy streams will be able to drive the fire back from the 5th Ave. side, and with the aid of ventilation performed by first truck company which, by the way, should be done immediately upon arrival of apparatus, should result in the fire being driven toward the west end of the building.

Hose Co. No. 2 to be placed at hydrant No. 11 and a single line stretched to the third floor by way of stairs, or ladder, to assist line already in operation on this floor in preventing fire from backing down on to the third floor. If conditions warrant, either or both of these lines may work up to the fourth floor.

Engine Co. No. 5 to be placed at hydrant No. 4, and with the aid of members of Hose Company No. 3 stretch two lines by way of ladders to the fourth floor on the Elkhorn Street side. The wind, will assist the lines operating from these two ladders in that it will tend to drive the fire in on the floor. These two lines, together with the two heavy streams from across 5th Ave., should be able to bring the temperature of the fire down so that close work may be accomplished.

With the above assignment of lines, operating from ladders, from stairways and from buildings across the street, it is believed the fire could be held to the top floor of the fire building, unless some unforeseen condition develops, such as collapse of floors, etc. It may be well to note at this point that the department operating at this fire did good work, and there is no certainty that the above assignment of lines would have accomplished more. It is believed, however, in view of experience in the fighting of hot fires of this nature, that larger streams would have proven far more effective than the greater number of smaller streams employed in the actual handling of the fire.

CHANGES PROPOSED TO BENEFIT ALL RHODE ISLAND VOLUNTEERS

Amendments to Delegate Police Authority While at Fire—Act Introduced to Inspect Buildings for Prevention of Fires

By FRANK CHARLESWORTH
Chief of Fire Department, Providence, R. I.

IN an effort to better working conditions for the volunteer firemen, the Fire Chiefs' Club of Rhode Island has prepared two measures that will be presented at the next meeting of the state legislature. One deals with police authority for officers of the department so that they can command residents to assist in fighting fires or order persons from a fire zone. The other act is concerned with the inspection of buildings to prevent fires. Following are the proposed measures as they are to be presented:

An Act Relating to the Authority of Fire Companies.

Section 1. The chief, chief engineer, assistant engineer, captain, lieutenant, or any other executive officer of any volunteer fire company, association, fire district company, or any other organization organized or created for the purpose of extinguishing fires and preventing fire hazards, whether the same be incorporated or not, and whether the same be a paid department or not, when on duty at a fire or in response to an alarm for a fire shall have the power to suppress any tumult or disorder and to order all individuals or companies to leave the neighborhood of any fire, and to command from the inhabitants of the city or town all needful assistance for the suppression of fires and in the preservation of property exposed to fire; the officers above enumerated shall also have authority to go onto and enter any property or premises and to do whatever may reasonably be necessary in the performance of their duties while engaged in the work of extinguishing any fire or performing any duties incidental thereto. Any person who shall neglect or refuse to render assistance when lawfully called upon to do so by any of such officers at a fire, or who shall refuse to obey any lawful order of any of said officers, or who shall insult, menace or interfere with any officer or man connected with any such fire fighting organization as above enumerated, while on duty at a fire, shall pay for each offense a fine not exceeding $20, or shall be imprisoned for a term of not more than 30 days, either or both, at the discretion of the court.

Section 2. Any person who shall wantonly or maliciously cut or otherwise injure any hose or apparatus belonging to or used by any fire department, company, association or other organization organized for the purpose of and engaged in the suppression of fires, whether incorporated or not, shall be subject to a fine of not less than $20 nor more than $200, or shall be imprisoned for a term of not more than 30 days, either or both, at the discretion of the court.

Section 3. Any person who shall obstruct or interfere with the use of any fire hydrant in any town, or city, by piles of lumber, building material, articles of merchandise, the excavation or removal of buildings, dirt or rubbish, or in any other way or manner, unless by permission of the Town or City Council, shall pay a fine not exceeding $20 for each offense. Every day that said interference or obstruction shall continue shall be regarded as a separate offense; provided, however, that the permission herein required of the Town or City Council may be lawfully obtained from the Commissioner of Public Works or any other officer of any city or town whenever he may be so duly authorized by law.

Inspection of Buildings

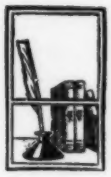
An Act in relation to the inspection of buildings to prevent fires, being an act in amendment of Chapter 172 of General Laws, Rhode Island, revision of 1923.

Sections 1 and 3 of Chapter 172 of the General Laws entitled "Of the Inspection of Buildings to Prevent Fires" are hereby amended to read as follows:

Section 1. The members of the Board of Fire Commissioners and the Chief of the Fire Department and his assistants, and any

(*Continued on page* 24)

WITH THE EDITOR



The Repairing Of Toys for Christmas

A particularly graceful and pleasing occupation for the spare time of the members of fire departments is the repairing of old and cast off toys donated by charitably minded parents and children, for presentation at Christmas time to the kiddies of poor families who otherwise would not enjoy the pleasures of this children's festival.

This interesting work has been taken up by many fire departments throughout the country with quite remarkable results in the toys turned out, which have been rendered as good as new through the good offices of the firemen. Besides offering a pleasing way of passing spare time, the men who are skilled in the arts needed to restore the toys to pristine freshness can feel a certain keen satisfaction in knowing that by their labors they are giving the unfortunate youngsters pleasure and happiness they otherwise would not experience in their drab young lives.

Often firemen, before joining the department, have served apprenticeship in trades that will give them skill in this sort of work, and the repair of the toys gives them an excellent opportunity to keep this particular kind of knowledge in practice.

The increase in the number of fire departments which have taken up this interesting work during the Christmas season, shows conclusively that it contains a strong appeal to the men who are by training, profession or inclination of a mechanical turn of mind. As time goes on it will probably further increase and become one of the institutions of the fire department.

Failing to Profit by Experience

While experience is undoubtedly a great teacher, human nature is often very loath to profit by this stern schoolmaster's precepts. This was very strikingly illustrated in the recent blaze that nearly leveled one of the most beautiful church edifices in the country about to be completed.

The blaze in the Rockefeller church on Riverside Drive, New York City, was simply a repetition of the fire which badly damaged the Sherry-Netherlands Hotel, also uncompleted, in the same city on the night of April 27, 1927. In both cases the fire was accelerated by the maze of light lumber scaffolding with which the structure was surrounded, and another point of similarity was the inaccessibility of the fire, which could not be reached by fire streams.

At the time of the Sherry-Netherlands Hotel fire the menace of this type of construction, surrounding the building proper with a forest of inflammable wooden scaffolding, was pointed out by fire-fighting experts. It was suggested that some less hazardous method of building in this particular type of construction be adopted, if that were possible. Perhaps it is not; that is, without considerably added expense and some inconvenience, But surely this expense and inconvenience would have been worth while to avoid the destruction wrought in both of these instances, and more than likely to be often repeated while such hazardous methods of construction are pursued.

No doubt the use of metal scaffolding would be expensive, as compared with lumber. There would also, doubtless, be difficulties in fitting and adjusting. But all of these could be met and overcome through the general adoption of this type of building construction and the added demand for the metal work. Even the difficulty of expense would probably be reduced by increased use of the metal scaffolding. Certainly, the security from fire, with its consequent dangers and delays—even where insurance covers the loss—would more than compensate for the extra money paid out for the safe scaffolding.

Probably the only sure method of reducing this menace to buildings under construction and to those in the immediate vicinity contained in the use of wooden scaffolding will be that adopted in the case of wooden roofs—namely, legislative prohibition of the use of combustible materials for the purpose. City or state ordinances looking to this end should be passed throughout the country, and the education of the public in this matter should be begun at once. This method is the only sure way to offset any lobbying against such legislation.

Giving the Apparatus Right of Way

In Washington, D. C., the traffic problem has again come to the fore, and the interference with fire apparatus answering alarms has become so troublesome that the police have been instructed to follow and obtain the names of all motorists who fail to give the fire department right of way.

This difficulty of the authorities of the National Capital is by no means confined to that city. Practically every municipality suffers outbreaks of the same fever among drivers of cars to race to "beat the engines to it." The only way to curb this exuberance on the part of the motorist is to make a severe example of a few of them by meting out punishment that will fit the crime. In other words, a jail sentence or two given the worst offenders would have a salutary effect in showing the speed maniacs that, as far as the fire apparatus is concerned, it is decidedly dangerous to indulge in this type

of sport, and that such indulgence will be apt to be followed by serious and uncomfortable consequences, to say the least.

Most municipalities in these days have ordinances on the statute books regulating this matter of right of way for the fire apparatus, and thus the cure of the evil consists largely in the manner of inforcement by the police. If a firm hand is shown in this respect by the authorities of law and order, the public will soon learn that disobedience of the statutes is not a healthful procedure and will act accordingly.

Ex-Chief Doane of Plainfield Dead

T. O. Doane, formerly chief of the fire department of Plainfield, N. J., died recently at his home in that city.

He was a carpenter by trade and had joined the fire department November 1, 1865, when twenty-one years old. Mr. Doane served with the Gazell Engine Co. No. 1 until he was made head

The Late T. O. Doane, when Chief of Plainfield, N. J.

of the department in 1888. He continued as chief until his retirement in 1916.

Funeral services were held from his late home and internment was made in the Soldiers' Plot at Hillside Cemetery. Members of the department acted as pallbearers and served as escorts.

Chief Gauthier Honored in Montreal

Chief Raoul Gauthier has been elected president of the Police and Fire Chiefs' Club of Montreal and District. The other officers elected were Chief Wm. Wren of Westmount, first vice-president; Chief A. H. Cadieux of the Canadian Pacific Railway Investigation Department, second vice-president; Chief R. N. O. Harrington of the McColl Frontenac Refineries, secretary-treasurer.

The club held its third annual banquet at the Place Viger Hotel. Chief Gauthier was home with a cold, and in his absence, Chief Wren of Westmount, presided.

Chief Herring Heads Welfare Work—Chief Albert Herring of Murphysboro, Ill., had charge of all the Christmas charity cases in that city. He was in charge of the committee that served 155 families with Christmas dinners, were hosts to 311 children, and delivered one-ton lots of coal to fifty-one families.

INDEX TO VOLUME LXXXI

The Index to Volume LXXXI, FIRE ENGINEERING, from the January 11 to the December 26, 1928, issues, is now off of the press, and will be mailed to readers on request.

FIREMEN AGAIN REMEMBER MANY POOR CHILDREN AT CHRISTMAS

Old, Discarded Toys Reconstructed by Men in Their Spare Moments—Toys Collected by Local Organizations and Given to Department

NEWS is the story of an unusual happening. Years ago, it was very interesting to read of firemen devoting their spare moments for the reconstruction of discarded toys so that the poor children might be remembered at Christmas time. At the past Christmas season, so many fire departments throughout the country have utilized their idle moments in this work, that an account of such work has ceased to be news. In fact, it has been looked upon as the accepted thing by some.

It is impossible to tell of all the departments that have cooperated with city organizations so that the unfortunate children in the community might know that there is a Santa Claus.

At Utica, N. Y., the Junior League distributed toys to poor children that had been reconstructed by the local firemen.

Knoxville, Tenn., boasts of a General Knox Santa Claus Club the object of which is to collect all toys that are no longer used, and to repair and redistribute the gifts to the poor children. The toys were all collected in December and then redistributed to the fire stations and high schools. As the various scooters, doll's dressers and so forth, were redecorated and repaired, they were taken to a central point to await delivery on Christmas Eve. Previously all of this work had been done by members of the fire departments but the tasks became so many that this year, the local high school boys have also helped.

Residents of Okmulgee, Okla., have found the answer to the question of "What do firemen do when there are no fires?" Last year members of the local department began restoring old toys for the poor. The plan worked so well that this year, four weeks in advance of Christmas, the men started fixing up toys that

Miami Firemen Help to Make Children Happy At Christmas

Large crowds assisted the firemen of Miami, Fla., in unloading Christmas presents for the poor children of that city. The toys were donated to the children by the residents and many knick knacks were reconstructed by the firemen.

otherwise would be useless. Old knick-knacks designed to gladden some child's heart, have found their way to the firemen's repair shops. For days before the merry holiday, the men did not know what it was to have a spare moment. All were busy in hammering, painting and reconstructing.

And so on. It would be impossible to tell of all the fire departments that volunteered to aid local charity organizations at the Yuletide season. At this time there is many a child who was made happy at Christmas that Santa Claus might normally have forgotten in his haste to make his other calls.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified.

Nozzle Pressure and Range of Stream

To the Editor:

Will you please answer the following hydraulic questions at an early date. The first question was asked in an examination held in this city for district chief.

Question 1. Find nozzle pressure in the following layout: 600 feet of 3-inch hose, engine pressure 180 pounds, and line equipped with 1⅜-inch nozzle. Also state the horizontal and vertical distances in feet stream will be thrown from the nozzle.

Will you kindly inform me if there is any formula for finding the horizontal and vertical distance a stream is thrown, when the nozzle pressure is known?

Question 2. An engine is pumping through two parallel lines of 2½-inch hose, each line is 100 feet, siamesed into a deluge set 12 feet in length, 4 inches in diameter, 1½-inch nozzle, engine pressure 120 pounds. Find nozzle pressure.

Is there any formula in finding this answer?

I have been a subscriber to your most valuable magazine for five years and find it to be the most helpful and instructive of all fire journals.

Yours truly,

B. F.

Answer 1. The formula for finding the nozzle pressure is: Nozzle pressure = engine pressure divided by $(1.1 + K \times L)$. In the above formula "K" is a factor depending upon diameter of hose and diameter of nozzle.

For 3-inch hose with 1⅜-inch nozzle, K = 0.137.

L, which is the number of 50-foot lengths of hose in the line, equals 600 divided by 50 or 12.

Then nozzle pressure $= 180 \div (1.1 + .137 \times 12)$
$= 180 \div (1.1 + 1.644)$
$= 180 \div 2.744$
$= 65.5$ pounds approximately.

As to finding the vertical and horizontal reach of the stream, the New York department has the rough rule of allowing one foot vertical or horizontal reach for each pound nozzle pressure. While this is a somewhat conservative rule, the figures it gives are thoroughly practical.

To get more accurately the effective reach of the stream, the following rules are employed:

Horizontal range: The formula for maximum horizontal range which is applicable to nozzle pressure over 30 pounds is: S = ½ N. P. + 26, for ¾-inch nozzle. Where S is the horizontal distance in feet and N. P. is the nozzle pressure in pounds. Add five feet to the 26 for each one-eighth inch increase in nozzle diameter. This formula gives satisfactory results for ordinary working pressure and under ordinary conditions.

As an example of the above the following problem is given: How far can a good fire stream reach when the nozzle pressure is 60 pounds and the nozzle diameter 1¼ inches? Solution: S = ½ N. P. + 26, where the diameter of nozzle is ¾ inches. 5 is to be added to the 26 for every ⅛ inch increase in diameter over the ¾ inch. Or S = ½ N. P. + 26 + 4 x 5. N. P. (nozzle pressure) = 60 pounds. Then S = 30 + 26 + 20 = 76 feet.

Vertical reach: The formula for vertical reach of a stream is: $H = \sqrt{240p - p^2} - 1900 - 15$ where H is the effective height in feet and p, the nozzle pressure in pounds per square inch.

For pressures of 50 or less, subtract 1 from the 15 for each ⅛ inch increase in nozzle diameter. Above 50 pounds, subtract 2 from the 15 for each ⅛ inch diameter increase.

Example: The pressure at the nozzle is 60 pounds; a 1¼-inch tip is used. How far upward toward a building will the effective fire stream reach? Solution: The pressure is above 50 pounds and the nozzle, 2/8 larger than the 1-inch nozzle, 2 x 2, or 4, must be subtracted from the 15 in the formula, which, for this example will read

$H = \sqrt{240p - p^2} - 1900 - 11$
$= \sqrt{240 \times 60 - 3600} - 1900 - 11$
$= 94.3 - 11 = 83.3$ feet.

Answer 2. The formula for finding the nozzle in this case is precisely the same as in problem 1.

K, however, will be different. K for two parallel lines of 2½-inch hose siamesed into a deluge set with 1½-inch nozzle is 0.135.

L, which is the length of either one of the parallel lines measured in sections is $100 \div 50 = 2$.

Then nozzle pressure $= 120 \div (1.1 + 0.135 \times 2)$
$= 120 \div (1.1 + .27)$
$= 120 \div 1.37 = 87\frac{1}{2}$ pounds approximately.

The value of K employed in the formula for this particular problem takes into account the slight friction loss in the deluge set. Hence no additional allowance is made for the 12-foot length of 4½-inch hose nor the siamese fitting.

Cellar Pipes; Transmission of Heat; Classes of Combustibility

To the Editor:

I am preparing for an examination and would appreciate very much your answering the following questions at an early date.

Question 1. At what kind of cellar fires are the following used: Bresnan Distributor, Baker Cellar Pipe, Hart Cellar Pipe?

Question 2. What are three recognized methods by which fire spreads? Explain them.

Question 3. What are five classes of combustibility?

Respectfully yours,

S. W. W.

Answer 1. The Bresnan distributor is used where the cellar fire is localized, that is, where it is burning only in a confined area, such as a compartment or a single room in the basement.

A Baker cellar pipe, as well as a Hart cellar pipe, is used where fire has extended so as to involve all, or a large part, of the basement. The Hart and Baker cellar pipes have much greater reach than the Bresnan distributor. On the other hand they do not give the thorough distribution of water over the area which they reach.

The Hart and Baker cellar pipes are precisely the same in their application, and the chief difference is in the method of directing the stream. With the Baker cellar pipe, the stream is directed by a lever handle, whereas in the Hart pipe the stream is directed by a small handle placed directly above the vertical pipe.

Answer 2. The three methods by which fire spreads are: Radiation, Convection, and Conduction.

By radiation it is meant the transmission of heat through the ether in the same manner as light is transmitted.

By convection it is meant the transmission of heat through physical means, such as heating of gases and movement of the gases so heated from one point to another.

By conduction it is meant the transmission of heat in sequence through the minute particles which go to make up an object. For instance, if a rod is heated on one end the heat travels by conduction to the other end.

Answer 3. Five classes of combustibility recognized by some fire protection authorities are: Slow burning, moderate burning, free burning, flash burning, and intense burning.

These different classifications are by no means clearly marked.

(*Continued on page* 22)

History and Evolution of Fire Fighting

Buckets and Hand Engines in Use in 1800—Fights Between Fire Companies—History Continued from Last Issue

By FRED SHEPPERD, Managing Editor of FIRE ENGINEERING*

FOR the next 75 years little progress was made in apparatus and methods of fighting fires.

Hand engines were made on a larger and larger scale, making possible the use of more men, and surprising as it may seem, hose was not put into as general use as early indications might cause one to expect. As an example, note the fire department in operation in 1800, as shown in Fig. 9.

This illustration, Fig. 9, represents one of the New York fire companies operating on a fire in 1800.

The bucket chain is quite conspicuous as is also the absence of hose on the engine. Later illustrations, however, show that hose gradually took its place and the buckets were used only for supplying the engine, where no immediate source of supply was available from which the engine could take suction.

Fig. 9—Firemen at Work, in 1800. From an Old Fire Certificate

Rivalry Between Companies

During the score of years just preceding the Civil War, a condition developed which even today is re-echoed in some of our volunteer departments. It was the rivalry between volunteer companies. So bitter did this rivalry become that rarely was there a large fire at which two or more companies did not devote more energy in fighting each other than in fighting the fire.

A specific example of this is given in the "History of the New York Fire Department" written by Augustine E. Costelle back in 1880.

One Sunday morning, July 26, 1846, a big fight occurred on Broadway (New York) between the runners of several fire companies. The companies involved were Engine Companies Nos. 1, 6, 23, 31 and 36. The fight lasted a considerable time and many of the combatants received more than they bargained for in their desire for excitement. On August 15, all companies concerned were disbanded by the order of the city council. In view of the magnitude of the combat, the aldermen considered they could not overlook the affair. The battle had raged all the way down Canal Street and attracted an immense crowd of citizens. After the disbandment, there was not a single fire company left in the 5th ward.

Benjamin J. Evans, who was the assistant foreman of Engine Co. No. 31, gives the following particulars of this big fight:

"We were called out from our quarters in West Broadway on still alarm, our foreman called 'Come, come, pull away boys for West Broadway's alive.' As we were returning home, at the park, we met Engine Co. No. 6 and they commenced to bark. Then along came Equitable, and she thought she would help No. 6, but found she was in a mighty pretty fix herself. No. 5 just then turned up near Ann Street, and as the 'short boys' cries greeted their ears, they said, 'Let us go and help old 31, and make the "short boys" feel sick.' Chief Engineer Anderson was standing at the time on the Astor House steps. No. 6, which then lay in Reade Street, began to 'bear' at us, and a fight resulted. In the midst of it, No. 1 Engine, which lay at the foot of Duane Street, appeared and sided with No. 6. Then Engine 23 of Leonard Street turned up and joined in with us. No. 36 followed quickly, taking Six's side. Pipes, axes, and any weapons handy, were used in the fight. It was a terrific fight, and lasted for a long while. At last, Anderson succeeded in putting a stop to it, and made us go down Canal Street instead of through Chambers so as to avoid our foes."

Fig. 10 shows a sketch of the preliminaries of a conflict between companies. In this case it resulted in the fight described in the preceding paragraph.

Gangs of Ruffians Also Caused Trouble

Not only did volunteer companies fight among themselves, but they were also set upon by gangs who made more than a little bit of trouble for the organized fire force. On certain occasions the firemen were exceedingly annoyed by gangs of ruffians. About 12 o'clock on Thursday night, October 15, 1860, the 22nd Street (New York) bell started an alarm in the third district. Engine Co. No. 19 rolled out their machine and took the usual route, through Christie Street to Second Avenue and then started up town. Most of its members lay in the direction of Grand, Hecter and Walker streets at the time. Those who rolled out the engine generally had to take her all the way to the fire alone, with the exception of such slight help as they picked up on the way. On this occasion there were only six persons in the house when the alarm was given, but they were augmented by

Fig. 10—Conflict Between Two Volunteer Fire Companies

* From a paper read before the annual convention of the Pacific Coast Association of Fire Chiefs at Sacramento, Cal., Oct. 1–6, 1928.

three or four strangers. As they neared the corner of 19th Street a hundred ruffians or more saluted them with a volley of heavy stones, brick bats, etc., knocking down and injuring severely two of the members and one of the strangers. The rest were followed with clubs, sticks, etc., and were forced to leave their engine. The ruffians upset the engine, broke her tongue, smashed the large silver eagle on the top of the machine and left it.

No. 19 was always friendly with other companies, and her friends determined to stand by her in this emergency. One night the fire bell was set going, and several companies lay in wait in the vicinity in which No. 19 had encountered the ruffians, and to which she would come now. The gang, however, seemed to be apprehensive and were afraid to come out. A newspaper man who wrote about the outrage said: "Now if these gentlemen (the gang) wish to have a pleasant evening's sport let them try the same game when she (No. 19) is coming from a fourth or fifth district fire. The companies are determined to take the law in their own hands. If they find these gentlemen they will give them the punishment they deserve."

Tricks Employed in Rivalry of Companies

In the rivalry between companies many tricks were reverted to in order to outshine their rivals.

A volunteer, belonging to No. 14 Engine (New York) conceived what he thought a magnificant idea to win a victory for his company. A new district had been opened up and the firemen were not very well acquainted with it. But the volunteer, in rambling through the locality, noted a fire plug, and impressed its position on his memory. One night a fire occurred in this section and the volunteer made a dash for the plug. He saw an old barrel near, slapped it over the plug and sat on it. He began to smoke and assumed a graceful and careless attitude as though he were an accomplished actor. An opposition company dashing up in front of the hydrant, caused the volunteer to smile and to chuckle. He was thinking of how proud 14 would be of him when they came along. He would then get off the barrel and reveal his treasure. But he didn't get the chance. Another company coming along saw the man on the barrel, and something about him made them suspicious. Perhaps he seemed too lazy and indifferent on the barrel. They rolled him off his seat, lifted up the barrel and discovered the hidden hydrant. Alas, for that zealous runner and his genius! He did not consort with No. 14 for a long time after. As for hydrants, it is reported that he never again sat on one.

(To be continued)

Automobile Blaze Causes Traffic Jam

Somewhat of the potential hazard that now confronts fire departments because of popular use of the automobile, is best illustrated by an incident that occurred in Morristown, N. J.

The residents were enjoying a fireworks display. People came from near and far to witness the entertainment and automobiles were parked on both sides of nearby streets. As the display was almost over the fire department was called out to extinguish a minor blaze in one of the parked cars. Before the apparatus arrived, volunteers extinguished the fire, but the resulting traffic jam was the worst that the community has ever experienced.

For more than an hour, police, firemen and others tried to open lanes through so the traffic could move. It was a man-sized job to permit those who came to see the fireworks to move on, and also to clear the traffic that followed the apparatus to the fire. With cars parked on both sides of the street, there was a very narrow lane left open in the center. It was with difficulty that the apparatus was finally able to find an opening so that it could return to quarters.

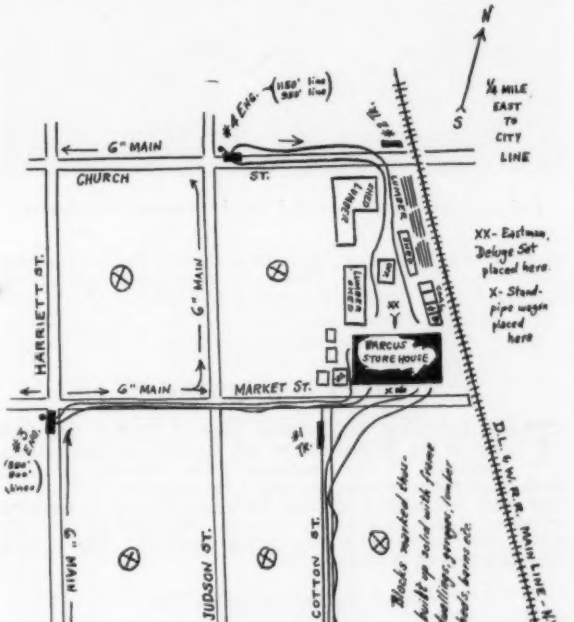
WAREHOUSE STOCKED WITH RAGS AND OILS DESTROYED IN ELMIRA

Exploding Drums of Motor Oil Causes Fire of Intense Heat—Department Hampered by Shortage of Fire Hydrants—Blaze Lasted 16 Hours

By ARTHUR W. ESPEY
Lieutenant, Fire Department, Elmira, N. Y.

A TELEPHONE alarm at 5 p. m. called three companies to fight a fire that had started in the warehouse of the Elmira Iron and Metal Co., after the fire had been burning for three-quarters of an hour without detection. The warehouse was located in the northeastern section not far from the city limits and it covered an area of 48,000 square feet. The building was about twelve years old, two stories high and constructed of wood, with no sprinkler protection.

At the north, the building was bounded by coal and lumber storage sheds, piles, bins and so forth, and buildings of frame



Layout of Streets and Buildings Near Warehouse Fire

construction. When the first engine company arrived, the fire had completely involved the building. Exploding oil drums shot the flames skyward.

Engine No. 1 stretched in from a hydrant at Harriett and Market streets, using a 7/8-inch tip, and they played on the west end of the store house. Engine No. 3 placed a second line from this hydrant and stretched in to the front of the building. This company also laid a line from a hydrant at Cotton and John. Engine No. 1 ran another line. Chief Espey, who had responded on the first alarm, sent in a special call for Engines 4 and 5; the former company placed a line from Church and Judson to the north end of the building to protect the coal and lumber. Due to shortage of hydrants, Engine No. 5 had to return back to its quarters.

As shown in the sketch, 6-inch mains were available, none gridironed. The shortest line was 650 feet and the longest 1,150 feet. This made it necessary to use small nozzle tips until the pumpers could be placed. A special call was sent for a Morse turret wagon. This took two mobile lines out of action and the two lines from No. 4 pumper were then connected to a two-way Eastman deluge set on the north side of the building.

The department succeeded in keeping the fire in the original

building. A frame dwelling on the west less than five feet from the blazing structure was saved. The fire lasted for about sixteen hours.

About sixty-five men were on duty at the fire. The apparatus consisted of four American-LaFrance 750-gallon pumpers, one 75-foot American-LaFrance aerial truck, one type 14 combined city service and hose truck, one double turret wagon and an Eastman deluge set.

The storage building was owned by Benjamin Barcus and used by the Elmira Iron and Metal Co., for the storage of large bales

Ruins of the Elmira Iron and Metal Company Warehouse

of rags, household belongings, drums of oil, metal, aluminum ware, pianos and so forth. Practically no insurance was carried. The loss will be slightly in excess of $150,000.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

Week Ending December 28th

MERRILL, WISC.—Cosmo Theatre block	80
RIDGEWOOD, N. J.—Van Emburgh's funeral chapel	25
DILLON, S. C.—Morris Fashion Dept. store	35
TUSCUMBIA, ALA.—Grammar School bldg. destroyed	50
CAMBRIDGE, MASS.—Plant of Lever Bros	70
MURRAY, IOWA.—Five business establishments	30
CARLISLE, PA.—Bldg. of U. S. Medical Field School	125
NEW YORK, N. Y.—Business bldg. at 139 Fifth Ave	425
ARCADIA, LA.—Brownie Theatre and adj. property	25
VERMONT, ILL.—Gold Bond Seed House destroyed	40
RIDGEFIELD, CONN.—Business bldg. damaged	25
WALKER, IOWA—Walker Savings Bank, adj. property	40
ASQUITH, SASK.—General store of Badger & Sons	25
NEW YORK, N. Y.—Riverside Church, Riverside Drive—122nd St.	800
NORTHFIELD, VT.—Two business blocks in Village Square	70
TERRE HAUTE, IND.—Gerstmeyer Technical High School	35
KNOXVILLE, TENN.—Two bldgs. of Riverside Poultry Farm	65
NORTHAMPTON, MASS.—Home of Mrs. Alexander McCallum	25
JAMESTOWN, N. Y.—Paint shop of Jamestown Street Ry. Co.	95
MATAWAN, N. J.—Varnish plant of Ernest Zobel Co	35
NEWARK, N. J.—John H. Carlo, Inc., paper plant	60
PONTIAC, MICH.—Plant of Pontiac Packing Co	70
DETROIT, MICH.—Two story bldg. occupied by Wolverine Hardware Co.	25
VIRGIL, KAN.—Derrick Theatre, drug store and adj. stores	30
NEW KENSINGTON, PA.—Edelson Dept. store damaged	80
WILMINGTON, DEL.—St. Peter's Cathedral damaged	25
LAMONT, ALA.—Three business bldgs. destroyed	35
CHICAGO, ILL.—Printing plant of B. E. Lawrence Co	80
CARROLLTON, MISS.—Bldgs. at 522-4 Main St. damaged	25
TUPELO, MISS.—Whse. of Rogers & Co	40
MORAVIA, IOWA.—Feed Store of W. C. Bivens	25
HEIDELBERG, PA.—Plant of Carnegie Refining Co	165
HULL, QUEBEC.—Main bldg. Sacred Heart Hospital	65
LAUREL, MISS.—Damage to Ferrell Building	25
CHATTANOOGA, TENN.—Glenn Hotel destroyed	80
PITTSBURGH, PA.—Edgeworth Country Club destroyed	80
SPRINGFIELD, ILL.—Mill of Springfield Grain Produce Co	125
MINNEAPOLIS, MINN.—Apartment bldg., 923 Chicago Ave.	25
BIRMINGHAM, ALA.—Colonial apartments destroyed	40
ALEXANDRIA, LA.—Whse. of W. W. Whitington estate	125
SHERBURNE, N. Y.—Dairy barn of R. C. Harper	25
BELTON, TEX.—Belton dept. store damaged	80
RICHMOND, QUE.—Brunswick House destroyed	50
LEWISBURG, W. VA.—Garage of Richmond & Hobbs	40
NEW YORK, N. Y.—Building of New York Steam Corp	80
STEELE, N. D.—Several business buildings	25

Week Ending January 4

MEMPHIS, TENN.—Four buildings of Aiken Co., Inc	80
COLUMBUS, OHIO—Plant of Rome Co., Inc., destroyed	165
BESSEMER, ALA.—First Methodist Church destroyed	160
PASSAIC, N. J.—Plant of Nat'l Macaroni Mfg. Co	50
SHEPHERD, TEX.—Kelly store and adjoining property	65
TWIN FALLS, IDAHO—The Fred Foss building	65
TONAWANDA, N. Y.—Young Street business property	55
CHESTER, S. C.—Monticello Consolidated Schools	50
HOT SPRINGS, ARK.—Lyric Theatre damaged	165
GIBSONVILLE, N. C.—Residence of O. W. Bright	45
BETHLEHEM, PA.—East Third St. business property	125
WILMINGTON, DEL.—Standard Garage, E. 3rd St	35
SEARSPORT, ME.—Plant of Armout Fertilizer Co	400
ARDMORE, PA.—Clubhouse of Merion Golf Club	80
MARLETTE, MICH.—Wm. H. Fox Department store	35
MILWAUKEE, WIS.—Residence of J. O. Frank	35
McLEARY, WASH.—McLeary Door Factory	2900
S. BOSTON, MASS.—Warehouse of Tremont Chemical Co	25
LYNCHBURG, VA.—D. Moses Dept. store and adj. bldgs	145
ATLANTA, TEX.—Cotton warehouse destroyed	160
HOPEWELL, VA.—Stewart Building destroyed	125
ARLINGTON, N. J.—Arlington Playhouse	45
BELMONT PARK, N. Y.—McCreery's stables destroyed	40
TECUMSEH, MICH.—Plant of Detroit Creamery Co	30
CALUMET, MICH.—Lake Linden Opera House destroyed	35
ELKHART, IND.—Plan of Elkhart Planing Mills	25
BOURBON, IND.—Consolidated school building	100
ASHLAND, ALA.—Ashland Hotel and adjoining property	35
WEST BOYLSTON, MASS.—Home of J. E. Sherman	25
BOSTON, MASS.—Worthy Lunchroom damaged	30
M'KEESPORT, PA.—Bldg. owned by Sam. Kalkston	30
MINNEAPOLIS, MINN.—Plant of Stewart Paint Mfg. Co	40
PINE BLUFF, ARK.—Pine Bluff Heading Co. plant	45
NORTHUMBERLAND, PA.—Garage and apt. bldg	65
HUDSON, N. Y.—State Armory destroyed	125
NEW ORLEANS, LA.—Bldg. of Schultze Stamp & Stencil Co	80
BLUE MOUNTAIN, MISS.—Six bldgs. of Blue Mt. College	80
BROWNSVILLE, TENN.—City Grammar School destroyed	45
HOBOKEN, N. J.—Whse. of Peter Cardinale & Sons	80
TACOMA, WASH.—Broadway business property damaged	65

Classes of Combustibility—Q. & A.

(*Continued from page* 19)

They are merely arbitrary classifications established apparently to identify and to describe different rapidities in combustion.

They might be defined as follows:

Slow burning—burning of materials which are protected against fire, such as metal sheathed wood doors, etc.

Moderate burning—burning of heavy timber construction and other materials which burn at a comparatively slow rate.

Free burning—burning of inflammable materials such as shingles, finely divided woods, paper, excelsior, etc.

Flash burning—burning such as typified by gasoline when afire.

Intense burning—burning such as is encountered in combustible materials in the presence of pure oxygen. Such fires would include those in which sodium and potassium chlorides and nitrates are present. Celluloid fires might well come under this latter classification.

Three Die in Search for Wallet in Night Club Fire

After helping patrons of his night club to safety, when fire occured in his quarters, the owner went back a fourth time to save his wallet. He was overcome and died. Two men who tried to save him were burned to death. The photograph shows ambulance surgeons treating two of the victims who died later.

NEW STANDPIPE RULES ADOPTED FOR THE CITY OF NEW YORK

Board of Standards and Appeals Formulates New Regulations—To Be Published in Their Entirety in These Columns

HEREWITH is continued from the November 28 issue the new "Standpipe-Fire Line Rules" of New York City. The original rules were adopted by the Board of Standards and Appeals of that city on June 22, 1922, were amended July 20, 1923, and again on May 18, 1928. The finally adopted form, as reproduced herewith, were adopted July 20, 1928. Through the courtesy of Chairman William E. Walsh, of the Board, FIRE ENGINEERING *is enabled to publish the entire new rules serially.*

These new rules are formulated largely through the efforts of Peter J. Maher, Fire Prevention Inspector attached to the Division of Fire Appliances of the New York Fire Department.

Following is a continuation of Rule 47:

SHAFT SLEEVES.—Shaft sleeves shall be of bronze and extend through stuffing boxes to protect the shaft from corrosion and wear from the packing.

BEARINGS.—Bearing brackets shall be of the best grade of close grained cast iron and securely bolted to the lower half of the casing.

Bearing brackets shall contain cast iron bearings lined with high grade babbitt and shall be removable. Each bearing shall be equipped with two oil rings to insure proper lubrication.

COUPLING.—Coupling shall be of best grade cast iron finished all over and keyed to shaft. The two halves shall be connected by coupling pins, transmitting power through rubber bushings, vulcanized on steel sleeves.

STUFFING BOXES.—Stuffing boxes shall be of sufficient depth to prevent excessive leakage and shall contain water seal rings of bronze.

PACKING.—Packing shall be held in place by bronze glands horizontally split and bolted together.

BED PLATE.—Bed plate shall be of cast iron of heavy box type and provided with finished pads to which the pump is bolted and doweled. Foundation bolt rings shall be drilled for foundation bolts. Jack-screw pads to be cast with bed and jack-screws furnished to assist in aligning. Bed plate shall be provided with ample drip rims, drilled and tapped for piping connections on both ends.

PAINTING.—Pumps shall be painted, filled, rubbed down to an even surface and finished with a drab steel-color machine paint, and the inside of the oil reservoirs in the bearing brackets to be painted white with a special oil-resisting paint.

RULE 48. SPECIFICATIONS FOR ELECTRICAL CONTROL AND OPERATION OF FIRE PUMPS.

TESTING.—Pumps shall be tested at the plant of manufacturer to prove that they can fulfill requirements of specifications and guarantees made.

MOTOR.—(a) Direct-current motors must be of the shunt or cumulative compound wound types. The speed of the motor at no load must not exceed the speed at full load by more than 10%.

Alternating current motors shall be of a slip ring type that will surely start and attain full speed under the current supply conditions where pump is to be installed. Approval of fire pump installations will be contingent on proper attention being given to the features mentioned herein.

(b) With a room temperature not exceeding 40 deg. C., motors shall be designed for a temperature rise not exceeding 40 deg. C. when carrying their rated full load continuously and shall also be able to run continuously with an overload of 15% without stress and without injurious rise in the temperature. Motors shall be able to withstand under the above room temperature an overload of 25% for 2 hours or a momentary overload of 50% without injury. No electrical or mechanical weakness should develop during these tests. The rise in temperature shall be measured in accordance with the Standardization Rules of the American Institute of Electrical Engineers.

Motors shall be of such capacity that a rated voltage 115% of its full load ampere rating will not be exceeded under any conditions of pump load.

(c) Motor and control apparatus must be protected from water coming from possible leakage, or breakage of any connection at the pump or other piping in its vicinity, including hose lines which may be connected to the pump.

(d) Motor windings shall be thoroughly impregnated with an insulating compound suitable for resisting moisture.

(e) Bearing shells and caps for motors shall be of the split type on at least the driving end, to permit removal and replacement without disturbing the motor or shaft after installment.

VARIABLE SPEED CONTROL OF MOTORS shall be provided except for fire pumps in theatres as required under Rule 86. Not less than five stages of speed variation will be permitted.

AUTOMATIC STARTERS will not be permitted except as provided for under Rule 86 (Theatres, etc.) of Standpipe Fire Line Rules.

CONTROLLING EQUIPMENT.—The following specifications cover the construction and installation of controlling equipments of manually operated devices for the control of electric motors driving fire pumps.

In materials, details of construction, test and installation, except as modified or supplemented by these requirements, all parts of the equipment shall comply with Chapter 9 of the Code of Ordinances.

All equipments shall be specifically approved for fire pump controlling purposes.

DESIGN.—(a) The design of all parts must be such as to secure simplicity, strength, durability and ease of operation.

(b) All parts must be mounted on one or more panels of slate, marble or other approved material, supported in a substantial manner on an iron frame, and the entire equipment must comply with the requirements for switchboards in Chapter 9 of the Code of Ordinances.

(c) All parts, such as bearings, cams and latches, the operation of which is liable to be interfered with by corrosion, must be made of phosphor bronze or similar metal except where magnetic qualities are essential. Springs must be of phosphor bronze or similar metal, or protected against corrosion in an approved manner.

OPERATING MECHANISM.—(a) The operation shall be such that the motor is directly started by a single lever, which shall be arranged to move in one direction from the initial to the final position.

(b) Electrical actuating devices will not be approved.

(c) Where direct current is used, an auxiliary field resistance shall be provided which can be used to increase the motor speed 10 per cent.

RESISTANCES.—Starting resistances must be, unless inside of the motor, of the grid type, and comply with the requirements of starting duty rheostats as given in Chapter 9 of the Code of Ordinances.

OVERLOAD PROTECTION.—(a) Each motor lead must be protected by a circuit-breaker. With direct current motors, leads must be protected by a single-pole circuit-breaker in each lead, or by an approved double coil, double pole circuit-breaker so designed that each pole must be closed independently of the other.

(b) Circuit-breakers to be calibrated to 400 per cent. of normal motor current.

(c) No fuses nor other overload release devices except circuit-breakers are permitted, except in instrument and pilot light leads.

WIRING.—All wiring shall be installed in rigid iron conduit.

SWITCH.—All approved knife switch for independent sources of supply must be provided, having one pole for each supply wire in circuit.

(*To be continued*)

Blazing Oil Well Defies Extinguishment

About ten thousand barrels of oil and forty thousand cubic feet of gas are being consumed daily by a burning jetty in the Santa Fe Springs, Cal., oil field. A giant pillar of flame and dense black smoke has been shooting skywards for some time, while workmen are trying their best to control the blaze. Firemen are wetting down neighboring buildings to prevent fire from spreading to surrounding property.

FIRE DEPARTMENT ACTIVITIES

Napoleon, O., to Buy Apparatus—Napoleon, Ohio, will soon buy a 750-gallon pumper.

Pleasanton, Cal., to Erect Fire House—Plans have been completed in Pleasanton, Cal., for the erection of a new fire station.

Glendale, Cal., to Erect Fire Station—A survey will be made in Glendale, Cal., to select the best site for the proposed fire station.

Dayton, O., Signs Fire Alarm Contract—Contracts have been signed in Dayton, Ohio, on two of the three sections for the fire-police signal system.

C. A. Daniel of Quaker City Rubber Co., Dead—Charles A. Daniel, president of the Quaker City Rubber Co., Philadelphia, Pa., died on Monday, December 24.

Weatherford, Tex., Votes on Bonds—Weatherford, Tex., held an election to consider a $55,000 bond issue part of which will be used for the erection of a fire station.

Chicago to Erect Fire House—Land has been purchased in Chicago, on which will be erected a fire station. The present three-story fire house in that district will be razed.

Organization Being Formed for St. Mary—An organization is being formed to look after the fire protection needs of an area five miles from the corporate limits of St. Marys, Ohio.

Rutherford, N. J., to Have Fire Prevention Unit—A fire prevention bureau will be formed in Rutherford, N. J. The bureau will see that laws on fire prevention will be enforced and will collect evidence on incendiary fires.

Washington, D. C., Fights for Right of Way—Police in Washington, D. C., have been ordered to follow apparatus to get the names of those who fail to give fire department apparatus the right of way. It was believed unwise to restrict the speed of apparatus responding to a fire but that the officers should be instructed to use their best judgment when going to a fire.

Morristown, N. J., May Have Paid Chief—An ordinance has been introduced to have a paid fire chief for Morristown, N. J., at a salary of $3,000 a year. The chief is to serve for a period of five years although he may be removed following a public hearing on charges of inefficiency, neglect of duty or disobedience. The Mayor is given the right to suspend him pending a hearing of his charges.

Milwaukee Has 776 Men on Force

In the November 28 issue of FIRE ENGINEERING, there appeared a tabulation of the strength of various fire departments, as compiled by the Indianapolis Chamber of Commerce. The list stated that Milwaukee had 256 men in the fire department. Chief Peter Steinkellner of Milwaukee writes that the figure is incorrect and may have been true in 1893. At present there ar 776 men in the department and the number will be increased considerably this year. Based upon the correct number of men, each fireman protects a population of seven hundred persons.

Fire Alarm Men Hold Meeting in Boston

There was a good attendance at the December sessions of the Eastern Association of Superintendents of Fire and Police Telegraph which were held in Fire Alarm Headquarters in The Fenway, Boston, Mass., on December 12 and 13.

President Morey F. Orrell, Superintendent of Fire Alarms, Worcester, Mass., directed the proceedings. Luncheons were held at the Hotel Hemenway.

P. C. Charnock, of the New England Insurance Exchange, spoke on "The Importance of the Fire Alarm System as a Factor in Municipal Protection."

George B. Germond, sales engineer of the Gamewell Company, read a paper on "Compressed Air for Public Fire Alarms."

Motion pictures of the Boston fire department in action were shown at the afternoon session on the first day and in the evening there was a round table discussion following a dinner at the hotel.

On the second day the program included discussion of the Regulations of the National Fire Protection Association for Fire Alarm Systems and a presentation by Harry Jones, of the New England Telephone and Telegraph Comapny, of motion pictures showing "The History of Telephone Development" and the latest machines for television. Messrs. Scott and Lytle, of the telephone company, gave short talks.

Announcement was made by Secretary George Bowen, of the Boston Automatic Fire Alarm Company, of the election to membership in the association of John E. Grady, supt. of fire and police telegraph, Worcester, Mass.; F. G. Anderson, supt. of fire alarms, Bridgeport, Conn.; and W. H. Merchant, inspector for the N. E. Insurance Exchange.

HARRY BELKNAP.

Deputy Chief Beggin of New York, Dead

William T. Beggin, deputy chief of the Eighth Division, New York Fire Department, died on December 20. Those who were privileged to have associated with him will remember him for his thorough knowledge of fire fighting as well as for his droll and entertaining stories. Funeral services were held from his late home on Staten Island.

His death followed within a few hours after his participation in the exercises arranged for the opening of the new fire house at Great Kills, Staten Island. Chief Kenlon noticed that Chief Beggin was not his usual self. He induced Beggin to go home and rest. A few hours later Chief Beggin passed away as the result of a combination of ailments of the heart and kidneys.

He was sixty-four years old. Firemen will always remember him as the founder of the Fire Prevention Bureau in New York city and an eager student in fire prevention matters.

Changes to Benefit R. I. Volunteers

(*Continued from page* 16)

other officer or officers or member or members of the Fire Department acting under the direction of such Board or Chief, of each of the cities of the State, and the Chief, chief engineer, captain or lieutenant of any volunteer fire company, fire district, or any other organization created for the purpose of and engaged in the work of extinguishing fires and suppression of fire hazards in any town of this State, whether incorporated or not, are hereby severally authorized and empowered to inspect all buildings, structures or other places in their respective cities where any combustible material, including waste paper, rags, shavings, waste leather, rubber, crates, boxes, barrels, rubbish or other combustible material that is or may become dangerous as a fire menace to such building or buildings, structures or other places, has been allowed to accumulate, or where such Board or members thereof, Chief, assistant, or other officer as aforesaid, has reason to believe that such material of a combustible nature has accumulated or is liable to be accumulated. If such Board or Chief of the Fire Department or Chief, captain or lieutenant of a volunteer company, as herein designated, after any inspection made under the authority of this chapter, shall in their discretion deem that any such accumulation of material of a combustible nature increases the danger of fire to the premises where such accumulation has been permitted, or to the property adjacent thereto, such Board or Chief of the Fire Department, or officer of a volunteer company as aforesaid, shall give notice in writing to the occupant or occupants, or one of them, of the premises where such accumulation has been permitted, to remove or cause to be removed from such premises such material of a combustible nature within forty-eight hours after receipt by him of such notice. In case such material of such a combustible nature shall not be removed within forty-eight hours after notice as aforesaid, such Board or Chief of the Fire Department, or other officer as herein specified, may cause the same to be removed from such premises, and thereupon shall cause notice in writing of the cost and expenses of such removal to be given to such occupant or occupants, or one of them, and also certify the amount thereof to the city treasurer or town treasurer of the city or town and in case such cost and expense shall not be paid to said treasurer within thirty days after such notice such city or town may recover such cost and expense in an action of the case against such occupant or occupants.

Section 3. Any person refusing to allow such inspection or hindering or obstructing said Board of Fire Commissioners or any member thereof, or any officer or member of the Fire Department of said city authorized by said Board to make such inspection or hindering or obstructing the Chief, chief engineer, captain or lieutenant of any volunteer fire company, fire district or other organization created for the purpose of and engaged in the work of extinguishing fires and suppression of fire hazards, in the making of the same, shall be fined not less than ten dollars nor more than one hundred dollars or imprisoned for not exceeding thirty days for each such offense. Any person who shall refuse or neglect to remove such material of a combustible nature at the expiration of the forty-eight hours notice provided for in section one hereof shall be fined not less than fifty dollars nor more than five hundred dollars or imprisoned for not exceeding sixty days for each such offense.

At left—*Mack Type 19—750 gallon combination hose and pumper delivered to Sherman, Texas, Fire Department.*

Below—*Another view of a Mack Type 19 Apparatus leaving the Engine House at Portland, Oregon.*

REG. U.S. PAT. OFF.

Mack

offers *today* the Fire Apparatus *of tomorrow*

Mack *progressive fire engineering* has developed in Mack Fire Apparatus the modern features of other motorized vehicles . . . a high compression engine for better acceleration . . . cylinders to secure maximum power from today's fuels . . . a driving mechanism which responds instantly to requirements in congested traffic . . . a thoroughly up-to-date four-wheel braking system.

Face Value is backed by modern design and construction.

And Mack engines have also provided equipment to keep pace with the fire fighting hazards of modern building construction . . . pumps capable of delivering large volumes of water at the higher pressure ranges . . . quick-acting ladders, raised by engine power with a Mack mechanical hoist . . . a lubricating system ample for extended periods of operation.

For detailed information write to Fire Engine Division, Mack-International Motor Corporation, 25 Broadway, New York.

More than one hundred direct Mack Factory Branches are available to service Mack Fire Apparatus in any emergency.

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Presses for Lining Service Pipe with Cement

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Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

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DOMESTIC
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The positive waste value.

All operating threads are dry, being above the stuffing-box.

No toggles, no small, quick-wearing parts.

All moving parts are bronze or bronze-bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

An easily installed
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readily adapts them to new grade.

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CAST IRON PIPE
(Sand-Cast or "Sand-Spun")
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Hydrants as manufactured by "Rensselaer" are being used to fight fire in every State of the Union. Made of the very best material and workmanship.

"The Rolls-Royce among Fire Hydrants"

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of every description, stronger than lead and non-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

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Wilmington Brass Co., Wilmington, Del.

PROPOSED IMPROVEMENTS

Uniontown, Whitman Co., Wash.—Funds are being raised for the purchase of a chemical car for fire department, according to reports.

San Antonio, Bexar Co., Tex.—Contracts for the erection of the proposed new fire stations to cost approximately $30,000 each will be awarded soon. Reports also state city will install 100 additional fire and police alarm signal boxes; $10,000 will be spent in re-installation of underground cable in downtown district. Phil Wright, Commr.

Redding, Shasta Co., Calif.—Press reports state the need of a new ladder truck for the fire department was shown at recent fire.

Taft, Kern Co., Calif.—City Council and fire department are considering the purchase of automatic doors for the fire station, landing pads for sliding poles, and automatic trap doors for sliding poles; two 50 foot extension ladders. A fire prevention bureau is to be established and the erection of a new fire station on site that city is considering the purchase of soon; also new fire alarm system and fire hydrants. Clarence A. Williams, Mayor and Pres. of the Board.

Holyoke, Hampden Co., Mass.—Reports state fire alarm department has recommended the purchase of additional non-interfering boxes. A new supply of fire hose is also needed, according to reports.

Flanders, Morris Co., N. J.—New fire station is to be erected for Flanders Fire Co. No. 1.

Elsmere, (Mail Ludlow) Kenton Co., Ky.—City trustees considering the purchase of a chemical car for fire department, according to reports.

CONVENTION DATES

Jan. 15-17—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. 47th Annual Convention, Fremont, Neb. Secretary, H. A. Webbert, Kearney, Neb.

April 1-3—FLORIDA STATE FIREMEN'S ASSOCIATION. 4th Annual Convention, Key West, Fla. Secretary, F. C. Pfaender, Winter Haven, Fla.

April 11-13—ARIZONA STATE FIREMEN'S ASSOCIATION. 6th Annual Convention, Yuma, Ariz. Secretary, Chief W. J. Nemeck, Douglas, Ariz.

May, June or July—SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION. 24th Annual Convention, Columbia, S. C. Exact date to be decided later. Secretary, Richard S. Hood, Sumter, S. C.

May 13-16—NATIONAL FIRE PROTECTION ASSOCIATION (International). 33rd Annual Meeting, Memphis, Tenn. Technical Secretary, Robert S. Moulton, 60 Batterymarch Street, Boston, Mass.

June—KANSAS STATE FIRE CHIEFS' AND FIREMEN'S ASSOCIATIONS. Tentative date of Conventions and first Fire School in Kansas, Newton, Kan. Exact date to be announced later. Secretary of both Associations, Chief K. D. Doyle, Wamego, Kan.

June—SOUTH DAKOTA FIREMEN'S ASSOCIATION. 13th Annual Convention, and Tournament, (Tentative date) Hot Springs, S. Dak. Secretary, M. C. Sullivan, Parkston, S. Dak.

June 12-13—NORTHERN INDIANA INDUSTRIAL AND VOLUNTEER FIREMEN'S ASSOCIATION. 24th Annual Convention, Bremer, Ind. Secretary-Treasurer, Hugh Russell, Bluffton, Ind.

June 12-14—MARYLAND STATE FIREMEN'S ASSOCIATION. 37th Annual Convention, Lonaconing, Md. Secretary, George R. Lindsay, Hagerstown, Md.

June 20-21—EASTERN ASSOCIATION OF FIRE CHIEFS. 2d Annual Convention, New York City. (Meeting place to be decided later.) Secretary, T. Howell Johnson, Room 602, Chamber of Commerce Bldg., Newark, N. J.

June 24-28—AMERICAN WATER WORKS ASSOCIATION. 49th Convention, Hotel Royal York, Toronto, Ont., Can. Secretary, Beekman C. Little, Rochester, N. Y. Office of Association, 29 West 39th Street, New York City.

June 25-27—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS. 7th Annual Convention, Hotel Taft, New Haven, Conn. Exhibits, Second Regiment Armory. Secretary-Treasurer, Chief John W. O'Hearn, Watertown, Mass.; Chairman, Exhibits, Chief John S. Pachl, Annex Fire Department, New Haven; Traffic Manager, Geo. F. Cobb, Boston.

July—MONTANA STATE FIREMEN'S ASSOCIATION. 38th Annual Convention (tentative date), Butte, Mont. Secretary-Treasurer, D. E. Moser, Bozeman, Mont.

July 9-11—MICHIGAN STATE FIREMEN'S ASSOCIATION. 55th Annual Convention, Sault Ste. Marie, Mich. Secretary, H. L. Williams, Luddington, Mich.

July 17-19—INDIANA FIREMEN'S ASSOCIATION. 12th Annual Convention, Gary, Ind. Secretary, Clem Smith, Fire Headquarters, Terre Haute, Ind.

August—IDAHO FIREMEN'S CONVENTION. Tentative date, August or September, Idaho Falls, Ida. Secretary-Treasurer, Earl Heath, Idaho Falls.

Aug. 7-9—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 7th Annual Convention, Fullerton, Cal. Secretary-Treasurer, H. E. Strasser, 1171 Tenth St., San Diego, Cal.

Aug. 7-9—SOUTHWESTERN ASSOCIATION OF VOLUNTEER FIREMEN OF NEW YORK. Annual convention, Falconer, N. Y. Secretary, Royce Alden, Falconer, N. Y.

Aug. 20-23—FIREMEN'S ASSOCIATION STATE OF NEW YORK. 57th Annual Convention, Saranac Lake, N. Y. Secretary, Fred A. Davis, Fort Edward, N. Y.

Aug. 26-28—NEW MEXICO STATE FIREMEN'S ASSOCIATION. 7th Annual Convention, Gallup, N. M. Secretary-Treasurer, Theodore A. Rosenwald, Albuquerque, N. M.

Aug. 28-30—VIRGINIA STATE FIREMEN'S ASSOCIATION. 43rd Annual Convention, Lexington, Ky. Secretary, E. K. Landis, Pulaski, Va.

Sept. 3-5—KENTUCKY STATE FIREMEN'S ASSOCIATION. 1st Annual Convention, Ashland, Ky. Secretary, Captain S. G. Render, 303 Speed Bldg., Louisville, Ky.

Sept. 9-11—ARKANSAS STATE FIREMEN'S ASSOCIATION. 8th Annual Convention, Camden, Ark. Secretary-Treasurer, H. D. Compton, Central Fire Station, Little Rock, Ark.

Sept. 10-12—ILLINOIS FIREMEN'S ASSOCIATION. 42nd Annual Convention, Joliet, Ill. Secretary, Assistant Chief Roy W. Alsip, Fire Department, Champaign, Ill.

Sept. 17-18—IOWA STATE FIREMEN'S ASSOCIATION. 52nd Annual Convention, Red Oak, Ia. Secretary, E. E. Parsons, Marion, Ia.

Sept. 20-21—NEW JERSEY STATE FIREMEN'S ASSOCIATION. 52nd Annual Convention, Atlantic City, N. J. (Tentative date, to be definitely set later by Executive Committee). Secretary, William Exall, Room 602, Chamber of Commerce Bldg., Newark, N. J.

Oct. 1-3—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. 50th Annual Convention, Hotel Roosevelt, Pittsburgh, Pa. Secretary, Charles E. Clark, P. O. Box 217, Wayne, Pa.

Oct. 22-25—INTERNATIONAL ASSOCIATON OF FIRE CHIEFS. 57th Annual Convention, Hotel Tutweiler, Memphis, Tenn. Exhibits, City Auditorium. Recording Secretary, Chief James J. Mulcahey, Yonkers, N. Y.; Executive Secretary, Jay W. Stevens, 1113 Merchants Exchange Bldg., San Francisco, Cal. Chairman, Exhibit Committee, Chief Selden R. Allen, Brookline, Mass.

CONVENTION OF NEW ENGLAND CHIEFS TO BE HELD JUNE 25-27

Headquarters to be at Hotel Taft in New Haven, Conn., and Exhibits in Second Regiment Armory—Members Invited to Suggest Topics

By HARRY BELKNAP

AT a meeting of the board of directors of the New England Association of Fire Chiefs held in New Haven, Conn., on December 20, it was voted to hold the seventh annual convention on June 25, 26 and 27, with headquarters in the Hotel Taft and exhibits in the Second Regiment Armory on Meadow Street, New Haven.

The following exhibit committee was appointed: Chief John S. Pachl, Annex fire department, New Haven, Conn., chairman; Chief William C. Mahoney, Peabody, Mass.; and Chief F. P. Dunnigan, Westport, Conn.

The meeting was attended by Chief Oliver T. Sanborn, of Portland, Me., president; Chief John W. O'Hearn, of Watertown, Mass., secretary-treasurer; Chief A. J. Cote, of Woonsocket, R. I.; Chief Lawrence E. Reif, of New Haven, Conn.; Chief James M. Casey, of Cambridge, Mass.; Chief Alfred H. Koltonski, of Rutland, Vt.; George F. Cobb, of Boston, traffic manager; and Harry Belknap, of Boston, press representative.

Chief Lawrence E. Reif, Convention Host

The directors left Boston on the 8:30 a. m. train and were met at the New Haven station by Chief Reif. After luncheon at the Hof Brau the party visited the Second Regiment Armory and the Hotel Taft. Then a meeting was held in Chief Reif's office at fire headquarters. Plans for the convention were discussed and a tentative program was outlined. The topics and speakers will be announced when the next meeting of the directors is held in February in Boston. Chiefs are invited to submit suggestions for topics of interest to Secretary O'Hearn.

Prisoner Freed as Rescue Reward

Governor Alfred E. Smith of New York, acting upon the suggestion of the state commissioner of correction, commuted the sentence of an inmate of Sing Sing for rescue work when the sheet metal shop at the prison burned in March.

With disregard for his own safety, he saved considerable property belonging to the state, and the lives of a number of prisoners. On August 31, 1917, he was sentenced to from twenty years to life imprisonment for a second degree murder charge.

FALSE ALARMS

A SURE WAY

"Young man," said the commissioner, "do you mean to say that when you had that trouble, you were unable to find a policeman."

"Yes sir. I looked up and down the street for one."

"Well, then, let me give you a tip. Next time you want a policeman, park your car in front of a fire hydrant. You will have a half dozen in thirty seconds."

A VICTIM EITHER WAY

Outside, the red painted battalion chief's car waited while two firemen carried a limp form into the doctor's office. The nurse announced the arrival.

"There's another patient for you, doctor. A victim of congestion."

"Of the lungs?"

"No, doctor, of the traffic."

EXTENT OF KNOWLEDGE

The fire college was very popular. Fire departments from the immediate section sent representatives there to receive instruction. As it was not far for some, many of the student-firemen went home each day after the lectures or demonstrations.

One day after a lecture, a fireman approached the instructor and asked:

"What did I learn today?"

"Why? What made you ask that?"

"Well, every time the chief sees me he asks, 'What did you learn today?' and I want to be able to answer his question."

Fun is like insurance: the older you get the more it costs you.

TIME WASTED

It was amusing to watch two men gesticulating widely. A stranger had asked the other how to reach a certain store. To this the resident, hampered in his speech repled:

"Y-Y-You g-g-o to the fire depart- and ask-k-k them if they h-h-had a f-fire in B-Brown's s-s-tore."

"But you don't understand. I don't want the fire department. I want to go to Brown's store."

"W-Well, ain't I t-t-telling y-you? If there w-w-was a fire in B-Brown's store, then they w-w-will know w-where it is."

The stranger lost his temper.

"So you're trying to kid me! Take it back or I'll bang you one on the nose."

"H-H-Here I spend f-f-fifteen m-minutes t-telling y-you how to g-g-get there, and now y-you w-want me t-to t-take it b-back."

RIGHT EITHER WAY

After the village fire department was through with their work, the owner of the damaged building began checking up. He discovered that some of the property was missing and he inferred that the firemen were guilty. He told the local newspaper editor about it, and the editor ran a glaring editorial:

"Half of the Village Firemen are Crooks."

After the paper had appeared on the street, the chief called on the editor and demanded that he retract such statements.

In the next issue there was a headline that read:

"Half of the Village Firemen Aren't Crooks."

SIGN OF THE TIMES

The country cousins decided to celebrate the Yuletide season. Loaded with fresh-killed poultry, pies and other delicacies, the family conveyance was halted by a policeman who was rushing about trying to open a lane for oncoming fire apparatus.

"What's the matter with you rubes? Can't you see those red and green lights?"

"Yes sir," replied the town visitor politely.

"And yet you ignore them."

"I looked at them."

"Then if you saw them and drove by them, will you tell me what you think they are lit for?"

"Yes, sir, for Christmas."

SOMEWHAT PARTICULAR

How fussy some people can be! For example, the following excerpt is taken from the *N. Y. Sun*, as part of a story about a fire.

"The fire was extinguished by local fire companies after the Grandquist home on the third floor, had been swept."

Some day the firemen will expect the floor to be vacuum cleaned.

EASY WAY OUT

A volunteer fireman was arrested for speeding after he had come back from a fire. The local judge was very severe in similar cases, for often other firemen when returning from a fire, returned a trifle too expeditiously.

In this instance, the culprit secured legal talent. He was advised to plead guilty, and since this was the fireman's first offense, he would probably go free with just a reprimand.

When the case came to trial, the judge asked:

"Guilty or not guilty?"

"Guilty, your honor." And then for fear he was not believed, he added, "I've got some witnesses to prove it."

Guard to convict: Hey, you, get to work!

Convict: Go ahead, fire me!

UP TO HIS PART

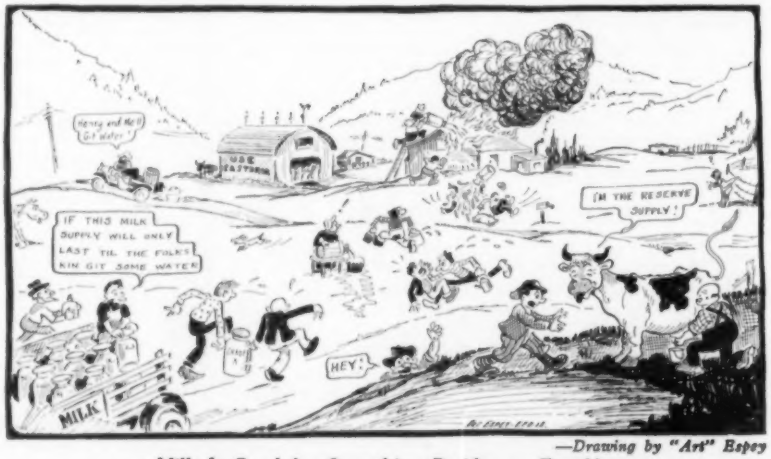
Even official regulations can not prevent the ocean's tide or control the girth measurement of a fire chief. At least it was not so in the little hamlet of Smithtown.

A visitor called at the central station and looked around as though puzzled.

"I am the chief," said the officer by way of introduction.

"Oh Lord! I thought you were the entire fire department."

Then we have the story of the apartment house dweller who bought electric light bulbs to raise currents.



—Drawing by "Art" Espey

Milk Is Good for Something Besides an Egg Nogg

It is so common to read of fire being extinguished by hose lines, that readers no longer pay any attention to such items. But in one town in Iowa, the unusual was accomplished when a fire was extinguished by milk. The town fire apparatus had made its run and had used up its chemical. Water was scarce. Just at this moment a large load of milk was passing by. The milk was seized and used on the fire, and as the cans were emptied, autos rushed to neighboring farms and brought water to keep the stream of liquid in operation. The fire was subdued. Thus the cow has obliterated her Chicago record as a fire-maker. She is now a fire-fighter.

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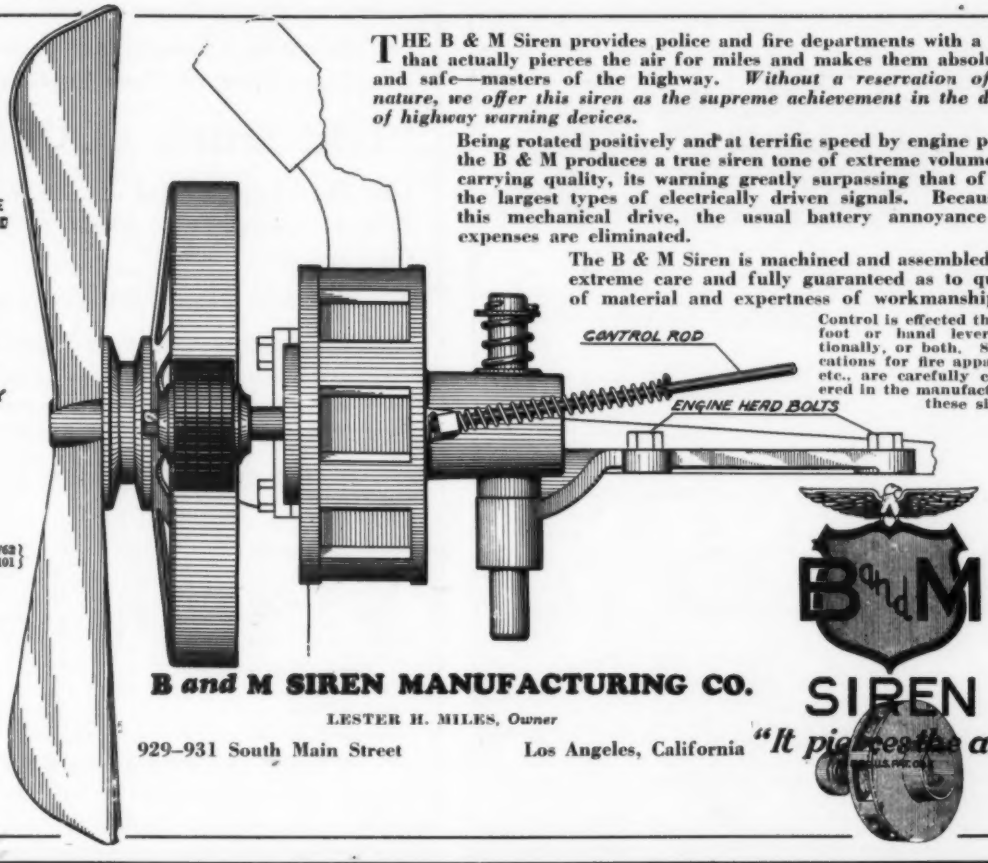

THE B & M Siren provides police and fire departments with a voice that actually pierces the air for miles and makes them absolute—and safe—masters of the highway. *Without a reservation of any nature, we offer this siren as the supreme achievement in the design of highway warning devices.*

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Control is effected through foot or hand levers optionally, or both. Specifications for fire apparatus, etc., are carefully considered in the manufacture of these signals.

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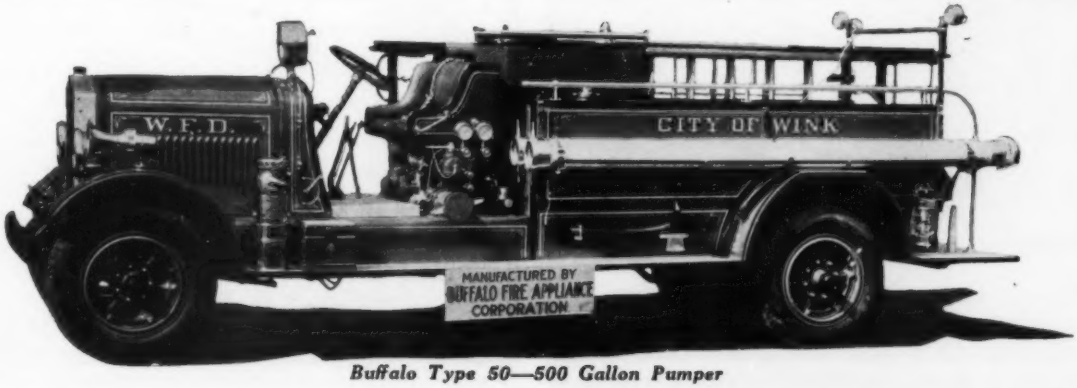
B and M SIREN MANUFACTURING CO.

LESTER H. MILES, *Owner*

929–931 South Main Street Los Angeles, California

"It pierces the air"



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Buffalo Pumpers are the most highly developed in design, construction and engineering standards and are intended for municipality, community and township fire protection.

Buffalo Pumpers are also noted for their efficiency and their great abundance of reserve power. They are pumpers with stamina and speed. All the above have to be credited for bringing great pumping merits for Buffalo Pumpers.

Buffalo Pumpers are given great and careful attention when under construction at our factory by engineers, both mechanical and designing, who have been in contact with the construction of pumpers for years.

Buffalo Pumpers range from 300 gallon capacity to 1000 gallon capacity.

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Write for detailed specifications

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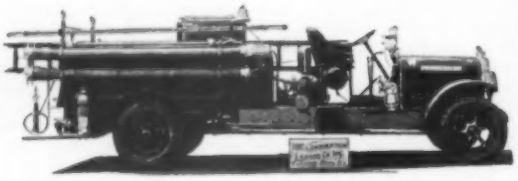
44 CENTRAL AVE. BUFFALO, N. Y.

Manufacturers of all types of Fire Apparatus



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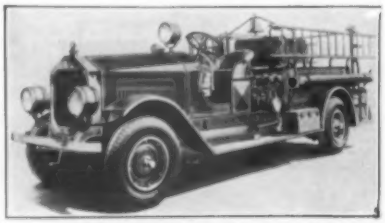

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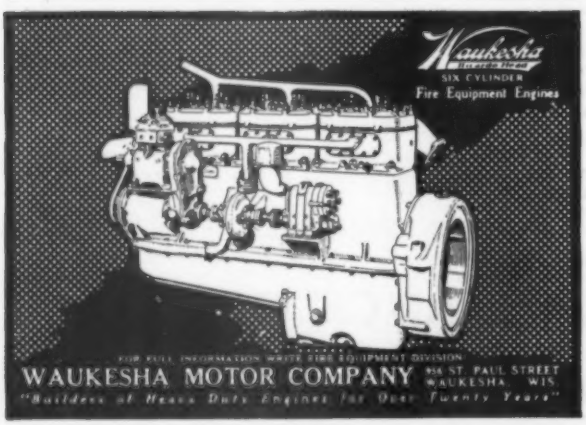

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Refer to Page

35

Training the Firemen in Pittsburgh

(*Continued from page* 10)

ing School each day of the week except Saturday, Sunday and legal holidays from 9 a. m. to 12 noon and from 1 p. m. to 4 p. m., the seven Battalion Fire Districts following out attendance in consecutive order.

Companies of Battalions attend school for a period of two weeks when they are working night turn. A schedule is arranged for each battalion showing the dates on which the various fire companies in each battalion shall attend school.

The companies are arranged on the schedule so that approximately the same number of men attend the school each day. These schedules are made out at Fire Headquarters every two weeks, a copy of which is given to the Battalion Chiefs and one to the Training School Instructors.

Where holidays or other causes interfere with the operation of the school during any particular week, companies are assigned at a suitable period. Each fire company under the present arranged schedule attends the school on an average of four times per year.

Methods of administration are determined by the chiefs assembled and in turn are given at officers' classes which are held at the various battalion headquarters, each battalion having a different evening of the week on which the officers who are working night turn assemble for classes which are conducted by the battalion chief in command of the district.

Time Evolutions Used at School

The following timed evolutions are used at the Training School, for the performance of which, the various Fire Companies attending the School are timed and given a percentage rating.

Stretching a 2½ inch line of hose to roof of training school by way of stairway, using all the men on the Company.

Connecting lines into four-way siamese, using three inch lead line, branch pipe and hose stick. Connecting lines into three-way siamese, using three inch lead line, branch pipe and hose stick. Stretching line of hose to roof of training school, using ladder and stairway. Stretching lines into turret, using two 2½ inch one three inch line. Pulling line of hose up onto roof, using hose roller, rope and axe and approved knots. Pulling twenty-five foot ladder up onto roof with use of approved knots. Connecting lines into standpipe, using a 2½ inch line from each fire hydrant outside of building. Stretching two 2½ inch lines into a two-way siamese. Connecting lines into Y's, using 2½ inch lines. Connecting lines into Y's, using three inch lines. Connecting two small one inch lead lines to a 2½ inch line, using Fen Y. Making end for end connection in 2½ inch line, using double male and double female connections. Extending length of line, using shut off nozzle increaser. Operating chemical tank and line. Handling line of hose on ladder, using rope hose strap. Raising and lowering of twenty-five foot ladder and the handling of same. Raising and operating aerial ladder and extension.

Principal Instructions Taught

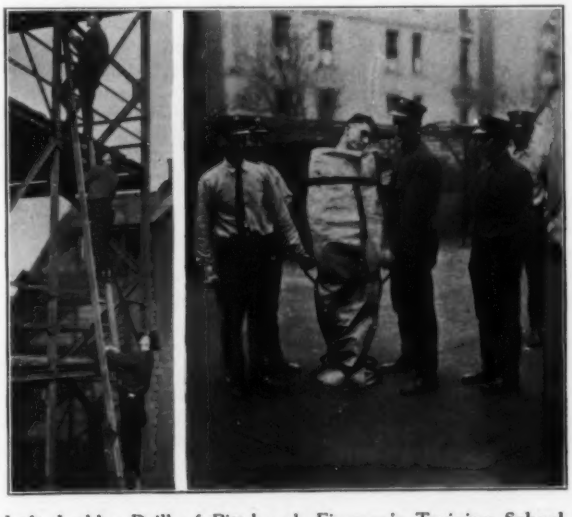
In addition to the timed evolutions used at the school the following principal instructions are taught at the regular class sessions:

How to use hose jacket on 2½ and 3 inch lines of hose. How to connect lines of hose into standpipes, using both inside and outside connections. General instructions on the operation of standpipes and automatic sprinklers. How to connect two pumpers or steam fire engines to one single opening fire hydrant. How to tandem two pumpers or steam fire engines. How to connect lines of hose into cellar pipes and sprays. The suction reducer and its use. Tying approved knots. Proper method of charging chemical tanks and hand fire extinguishers. How to break glass, both plain and wired, from doors and windows. Proper method of ventilating buildings. Shooting life line to window or roof of building. Sliding down life line from window or roof of building. Jumping into life net and proper way of holding same. Building chain of pompier ladders from ground to roof of building. Standing on window sill with one pompier ladder. Sitting on window sill with one pompier ladder. How to carry sick or unconscious persons. The proper use of body wrapper. How to lower dummy "Mulligan" from window or roof of building. Artificial respiration, using Sylvester's and Schafer's methods. General instructions in the use of smoke helmets, gas masks and pulmotor. Operation of fire alarm boxes and transmission of signals.

Salvage Work Also Taught

Among the newer activities of fire departmental work in which Pittsburgh during the last two years has made great strides is that of Salvage Work which is part of the course of training received at the class sessions of the Training School which consists of how to spread and handle covers as well as how to fold, repair and preserve same.

Not only are salvage covers carried on the Emergency Squad Wagon located in the downtown business district of the city, the only unit of its kind in the Department at the present time, but are also carried on all of the Hook and Ladder trucks in the Department as well as on most of the pumpers and combination hose and chemical wagons, eight covers being carried on each of the twenty-one Hook and Ladder trucks and from one to two covers on pumpers and combination wagons.



Left, Ladder Drill of Pittsburgh Firemen's Training School. Right, Method of Adjusting Body Wrapper for Removal of Victims at Fires

By the practice of common sense salvage methods at fires quite a record has been run up by the Pittsburgh Fire Department in this new line of work and together with the up-to-date salvage methods taught at the school have had a tendency to increase the moral of the men in the Department in general in exercising more care in their work at fires, particularly in that of preventing unnecessary damage by water to stock and contents of business buildings and especially to furniture and household goods of small home owners and occupants who in many cases do not carry any insurance to cover losses caused by fire.

Approximately 100,000 men have passed through the school and have received instructions at Company Class Sessions since the school was first organized. In addition to the regular men who have received instructions in Company Classes, a number of men including officers and privates of other fire departments outside of the city of Pittsburgh have taken courses of instructions at the school during the regular class sessions and at night

answered all alarms with Engine Company No. 14 and Truck Company No. 14, in the rear of whose quarters the school is located.

Record of the School Chief Instructor

Captain Foster, the present Chief Instructor of the Firemen's Training School, joined the Fire Department as a Substitute Hoseman, October 12, 1893. He was appointed regularly as a ladderman April 1, 1895, and assigned to Truck Company No. 1 in the downtown business district. He was promoted to driver April 9, 1896, transferred to Engine Co. No. 15, and appointed to Assistant Engineer of Engine Co. No. 15, May 4, 1900. His next promotion was to Lieutenant on the same Company on December 5, 1903, and on December 1, 1906, he was promoted to Captain and assigned to Engine Co. No. 19 in the downtown business district, where he remained as Captain until March 20, 1915, when he was promoted to Training School Instructor.

Sent to New York Fire College

On March 31, 1915, Captain Foster, along with Captain James Kane of Engine Company No. 34, now retired and in the employ of the Dupont Powder Company as Chief of their fire fighting forces, who was appointed Instructor with Captain Foster, were sent to the New York Fire College for a thirty-day course of instructions and training to fit them for their new positions.

Upon their arrival in New York City and reporting to Chief John Kenlon, Captain Foster and Captain Kane were assigned for duty on Truck Company No. 24, located on West 33rd Street near Sixth Avenue, one of the busiest truck companies in the city. Captain Foster and Captain Kane answered all alarms of fire with this company at night and attended the school or college courses each working day from 9 a. m. to 4 p. m.

Captain Foster and Captain Kane graduated from the Fire College with high honors, and their work, attendance and strict attention was highly commended by Chief Kenlon in a letter to the late Charles S. Hubbard, at that time Director of the Department of Public Safety.

Record of the Assistant Instructor

Training School Instructor, Captain Louis J. Conley, assistant to Instructor Foster has been a member of the Fire Department for twelve years, entering the Department as a substitute hoseman and being assigned for duty on Engine Company No. 25 on July 10, 1916 at the time the two-platoon system was installed in the department. He was appointed as a regular hoseman on Engine Company No. 25 on October 10, 1916, and on February 7, 1924, was promoted to Junior Lieutenant and assigned to Engine Company No. 55. On March 16, 1924, he was transferred to Lieutenant on Truck Company No. 3 in the downtown business district and on October 1, 1925, was promoted to Senior Lieutenant and transferred to Engine Company No. 25, where he remained until appointed Training School Instructor November 4, 1926.

Captain Conley is thirty-three years old. During the World War, he left the Fire Department to serve overseas with the United States Marine Corps, ranking as a non-commissioned officer. At the end of the war Captain Conley returned to the Fire Department after an absence of eighteen months.

After the retirement of Captain Kane in 1918, Captain Frank C. Loxterman of Engine Company No. 4, at present one of the Deputy Chiefs of the department was appointed to fill the vacancy of Instructor on October 1, 1918, which position he held until May 1, 1923, when he was appointed to the position of Battalion Chief and assigned to the Third Battalion.

Officers Who Have Served at Head of School

Following the appointment of Captain Loxterman to the position of Battalion Chief, Captain Peter J. McGuire of Engine Company No. 32 was promoted to the position of Training School Instructor.

During a former city administration the Training School was practically abolished by the newly appointed City Officials with the reorganization of the Fire Department and the action of City Council in eliminating the two positions of Training School Instructors from the city budget. With this action, Captain Foster and Captain McGuire were relieved of their duties as Instructors. Captain Foster was assigned to Engine Company No. 14 as captain and Captain McGuire to Engine Company No. 7 as captain. Captain McGuire did not accept this assignment and retired on pension, June 16, 1924.

With the appointment of the present Chief, Richard L. Smith, as Chief, February 1, 1926, and the reorganization of the Department after he took command, the Training School was immediately re-established by Chief Smith and Captain Foster was restored to his old position and again put in command of the school as Chief Instructor.

Chief Smith has always been a strong advocate for the Training School and all its activities and evolutions and has endeavored to bring the school up to the highest point of efficiency possible with the limited means at his command to carry on the full work of the school, with the result that today Pittsburgh has a Firemen's Training School that has proven its worth to the department, and that any city of its size can be well proud.

Plans Made for Nebraska Convention

A short course on fire prevention, control and extinguishment will be held in conjunction with the forty-seventh annual convention of the Nebraska State Volunteer Firemen's Association to be held in Fremont, Neb., January 15-19. The short course will be in charge of Dr. G. E. Condra, director of the Conservation and Survey Division of the University of Nebraska. Certificates will be issued to the men who attend the course. The program of speakers follows:

Outline, History and Results of Short Courses in other States, by Linden J. Murphy, engineer in charge of short courses, Iowa Agricultural College, Ames, Ia.

Fire Fighting Methods, by Clarence Goldsmith, assistant chief engineer, National Board of Fire Underwriters, Chicago.

New Developments of Fighting Fire, by Frank McAuliffe, Chief of Chicago Fire Insurance Patrol.

The Firemen's Responsibility in Fire Prevention, by Harry K. Rogers, fire engineer, Western Actuarial Bureau, Chicago.

Apparatus and Equipment, by Clarence Goldsmith.

Salvage, by Frank McAuliffe.

First Aid and Life Saving, by Harry K. Rogers.

The Fremont Fire Department and the local Chamber of Commerce have made plans for the entertainment of those who will attend the convention.

Lloyd C. Thomas, Hastings, is president of the association and H. A. Webbert, Kearney, is secretary.

New Providence, Ia., Receives Apparatus—A Boyer chemical car has been delivered to New Providence, Ia.

Albany, Ga., Spreads Christmas Cheer—Chief Brosnan, of Albany, Ga., had charge of spending a fund to care for some of the neediest cases in that city at Christmas time. He gathered his information by beginning well ahead of the holiday season. He card-indexed every case considered. The beneficiaries received clothing and food, and in addition, the children received toys.

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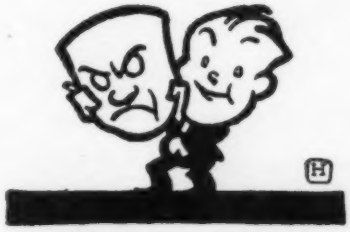

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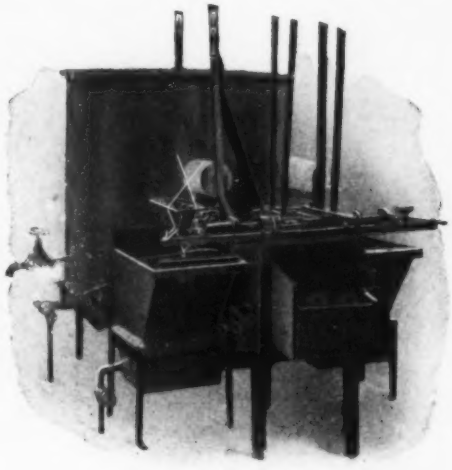

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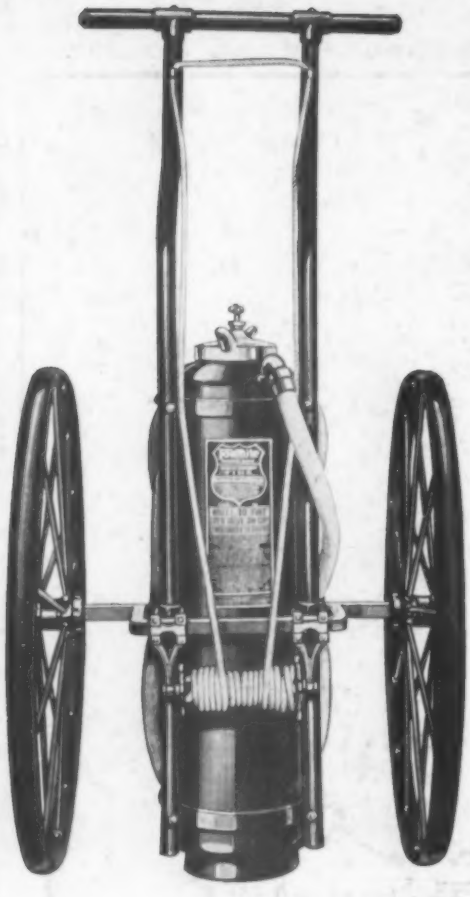

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